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# digit

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TECHNOLOGY

# A cultural evolution

If there's one thing I have to put down as the most interesting part of my job, it has to be people. Yes, people over the latest and greatest products that flow into our test centre. It's the people you meet, their myriad different tastes in humour, music, movies, favourite web sites that you're exposed to, and the wacky ideas that fly about in our office that really make this job fun.

Recently, we got to talking about the "culture" of technology. We decided to look at this inexplicable deviance in how individuals like to use their technology. What is geek culture really? Can we even attempt to define it? How does said culture really change us, and is it even good to be cultured?

Many believe that technology is what shaped the geek cultures of today, but I think it's always been the other way around.

Looking at the state of the world, it would be easy to segregate it into the haves and have-nots of technology. It's also easy to extrapolate that into the idea that it's usually the first world countries that make up the haves, and the third world countries that make up the have-nots. Simple, right?

Wrong. Every country has within it the same segregation of haves and have-nots. While millions in India don't even have a toilet to use, there are still hundreds of thousands with enough money to buy the latest in technology – often spending much more than people in the US do! Similarly, in the US you will find people who can't write and have never used the Internet in their lives, and yes, some of them have no toilet to call their own.

It's not geographic. Each one of us is a part of a different set of cultures, based on our interests, passions and exposure. It's the friends we keep, the sites we surf, the jokes we share, the products we like, the books and magazines we read, etc., that define us.

So what drove us to geekdom? Some think it was the opening up of our economic border to allow western companies and technology into India. People cite the Internet as the game changer – exposing us to different cultures, increasing the penetration of PCs and mobiles. However, wasn't it the basic need for humans to connect and communicate with one another across distances that brought about post (snail mail), the telephone, and yes, the Internet as well?

Is it mental boredom of the haves that brings about some of the new cultures?

Why did *Kolavari Di* become so popular, or Facebook and Twitter for that matter? With all the useless tweets, pointless Facebook updates and mindless YouTube sensations, one could be tempted to accept the idea that boredom causes us to do stupid stuff, or just watch other people do stupid stuff.

In the end, I think it's more to do with the living conditions and the norms of society we live in. You are what you eat, drink, think and talk about. For example, everyone in the UK seems obsessed with the weather, because it's so unpredictable. Here in India, talking non-stop about careers and salaries, Sachin Tendulkar's hundredth 100, or singing *Kolavari Di* in a cracked voice is popular. It's more localised, more relevant to you.

You are ambushed by ads on all of the popular sites you visit, or get friends spamming you with Dhanush-me-toos singing their own versions. This is because when a culture becomes big enough to be noticed, everyone wants to be a part of it. Many cell phones have Facebook connectivity as the major selling point, or use the word "Android" prominently. It's because we've decided what's cool, and companies do their level best to try and take advantage of it.

What's most beneficial, however, is understanding what new cultures will be big, before they're big. How beneficial? Apple just reported over 13 billion dollars in profit, by doing exactly this. Of course they didn't invent touch interfaces, as many people might believe, but Apple did time the iPhone release to perfection. They also did away with keypads, and brought multi-touch to the masses – of course they weren't the first to showcase multi-touch either, but predictions of cultures is what it's all about.

It's not just about business though – we can also benefit personally from opening up to new cultures. Our cover story attempts to show how this can be achieved, just by broadening what you're exposed to. Think of technology as the evolution of the species, and the various cultures just the genetic mutations that usually form when evolving. What I'm hoping for is the survival of the fittest cultures, which may not necessarily be the most popular today. ■



**Robert Sovereign-Smith**  
Executive Editor  
[editor@thinkdigit.com](mailto:editor@thinkdigit.com)

**"While millions in India don't even have a toilet to use, there are still hundreds of thousands with enough money to buy the latest in technology – often spending much more than people in the US do"**

A stylized, handwritten signature in black ink, which appears to read 'Robert Sovereign-Smith'.

Liked or hated this column?  
Write in to [editor@thinkdigit.com](mailto:editor@thinkdigit.com) and let me know your thoughts.

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## Demo Games

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#### Design

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Chief Photographer Subhojit Paul  
Sr Photographer Jiten Gandhi

#### Contributors

Writers Kshitij Sobti, Siddharth Parwatay,  
Mithun Mohandas

#### Production and Logistics

Sr GM - Operations Shivshankar Hiremath  
Manager Operations Rakesh Upadhyay  
Asst Production Manager Vilas Mhatre  
Asst Mgr Vijay Menon  
Production Assistant Brahmanand Nikalje  
Executives M P Singh, Mohd. Nadeem Ansari  
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#### Brand

Product Mgr Navneet Miglani  
Mgr - Online Shauvik Kumar  
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#### Circulation Sales

National Co-ordinator Samir Mehta  
Regional Mgrs Jayanta Bhattacharyya,  
Norbert Joseph  
Manager Circulation Dharmendra Singh  
Executive Vijay Mhatre

#### Reader Services

Lead Associate Sourabha  
Executives Itishree, Pinky, Sudhir, Sufiyan  
+91-22-678 99 678 / help@thinkdigit.com

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##### Smartphone Comparison Test

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Blackberry Torch 9380  
Blackberry Torch 9860  
HTC Evo 3D  
HTC Radar  
HTC Sensation  
HTC Sensation XE  
LG Optimus 2X P990  
LG Optimus 3D  
Motorola Razr XT910  
Nokia Lumia 800  
Nokia N8  
Nokia X7  
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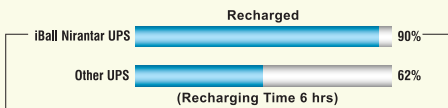
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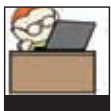
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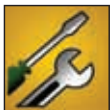
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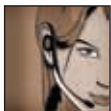
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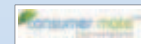
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✉ I got a chance to go through your hand book “Fast Track to Linux Administration” from my organization’s library. I would like to buy that book but it came bundled with your publication in July 2010. Could you please let me know where can I buy that hand-book separately.

*Aravind KS*

■ Thanks for your interest in “Fast Track to Linux Administration”. For ordering from our magazine archives, bookmark [www.thinkdigit.com/store](http://www.thinkdigit.com/store) in your favourite web browser. It’s the only place you can order older Digit issues, Fast Tracks and DVDs. For your current request, visit the following link:  
<http://bit.ly/zaSGR8>.

*Jayesh*

✉ Hello, I am a big fan of your magazine as it’s very helpful to me for buying products. We acquire knowledge of computers. And the CDs you provide are wonderful. I won’t stay calm until I read a newer version of Digit

*Akash Halkia*

■ Thanks for the support. It’s great that you’re able to pick up pointers on buying products and boosting your computer knowledge. We love all our fans, you’re the reason we do what we do.

*Jait*

✉ It’s been only 2 months since I subscribed to Digit but it feels as if I had explored it for many years. Now I wait for the 1st of every month to get my copy of Digit. I found the December 2011 edition very fascinating especially because of the Zero1 awards. It provided a comparative and illustrated analysis of various devices on market. It was extremely useful for making choice in selecting which device to purchase. The article I found most interesting was “Graphic Cards: How they Work”. It was really well elaborated and illustrated. It was extremely useful and entertaining and now I know that every time I open a game on my PC, the graphic cards have to perform a great deal of work. When I think of December

## Feedback about the January 2012 issue of Digit



edition, these words come to my mind, “Couldn’t be better”

■ We are glad that you are hooked onto our magazine. Well, it’s a healthy addiction, whose side-effects include the best tech gyaan and the person reading it becoming a tech-guru of sorts among his peers. Zero1 awards honour the best products in each category and we are happy to know that you liked the layout. If you liked the article on graphics card, then you are going to love this month’s edition as it educates you on some more game related jargon. You will appreciate graphics cards and games even more. Also do follow our sister site [www.thinkdigit.com/gpu-guru](http://www.thinkdigit.com/gpu-guru) which will give you all the latest information you need on graphics card.

*Robert*

✉ I’ve been reading Digit for quite sometime and I have to say that you guys are doing a tremendous job. I completely finished reading my January Issue two days ago and here are my thoughts about Digit.

**Magazine:** Cover arts are great (particularly the December & January Issues). You can spend quite sometime admiring the cover. Your style of writing tech arti-

cles dashed with humor is awesome and I prefer Digit among others just for that. I would like to see less advertisements in the middle of an article because it sometimes affects the reading experience.

**Fast Tracks:** They are quite good as well. I enjoyed the “Fast Track to Space Exploration.” But I miss Digit’s humour in the Fast Track. In the coming months I would like to see a ‘Fast Track to Operating Systems’ or ‘Fast Track to Evolution of Computers’. It would help quite a lot in boosting our knowledge.

**DVDs:** They are amazing to explore. That iPad interface looks pretty and is easy to use. This time you guys did a great job in including the educational content. But sometimes it becomes difficult to play DVD on my desktop. My desktop never recognizes it. So I have to play it on my notebook. You should improve the quality of the DVDs.

**Delivery System:** I love the way that Digit Support Team would mail me at the start of each month telling that my copy has been dispatched, including the necessary details. But it would be nice to have Digit delivered to subscribers by 2nd or 3rd Day of each month. It is quite frustrating to see Digit appearing in news stands before they are delivered to our homes..



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## Siri's doppelganger?

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## Holograms, anyone?

Holoxica showcased its new prototype holographic display at CES  
<http://bit.ly/zU8qnr>

### LETTER OF THE MONTH

✉ I have been a Digit subscriber for past 2 years. The other day I was reading an international science magazine and was shocked that it had so much information about science & technology. It had topics such as a robot revealing pyramid secrets, dark matter hunt going underground, 21st century additions, the secrets of Stonehenge, what number is infinity plus one? Why don't we use desalination technology to provide drinking water? How to stop procrastinating? How do you generate electricity from waves?, etc. It's filled with computer related stuff too.

Your magazine says "Digit - your technology navigator". In the Jan 2012 issue you have given articles about trends on security, flexible displays, world beyond 1080p, online shopping, etc. These articles are all based on a general computer technology. Seems like you guys have exaggerated it just to fill blank spaces. There is a huge quantity but no quality. The magazine says "Digit - your technology navigator" but you are focusing only on the computer part of technology. Tech is related to lot of things. Reviews of processors, motherboards, keyboards and cameras are published every month just to fill sheets. I liked just one article: Higgs and Seek and the Fast Track.

While writing the letter I literally had to search the magazine to give an example about a good article. You may think it's just one person's opinion but I've asked a lot of people who say that Digit is starting to lose its standards.

I hope you take this as a suggestion rather than a complaint. You guys need to research more before publishing. For the expensive Rs150 you charge customers expect a lot of things may be a survey or feedback may help.

*Shashank Keshava*

■ Thank you for your mail. Yes we are a little more focussed on the computer technology side of things than the

general sciences. Although we do write articles about science in every issue, and some issues might contain more such articles than usual (our last anniversary issue, for example), we cannot forget that our roots are PC tech.

Digit is more about de-mystifying technology for regular folks, and helping the geeky-at-heart to get a leg-up in the world of tech. Ours is a community of doers, and we aim to please that community with the articles we write. The tests you speak of are rigorously conducted every month to let readers know that not all products launched in the market are deserving, and we ensure that our readers save their money by buying only deserving products. They're not "space fillers", and perhaps the most significant contributor to why more people read Digit than all other tech magazines combined.

While other magazines write articles about the stuff robots are doing across the world, Digit gave out Fast Track to help our readers build their own robot. While every mag/site will talk about going green, and talk about environmental issues, we went out and bought seeds, and encouraged our readers to plant them and grow trees, and even though only hundreds of readers (from lakhs) did that, that's several hundred new trees that wouldn't have existed in the normal course of things. Like I said, doers.

I wish I could tell you that we will change, and try and be more like the magazines you look up to, but I cannot, because that would be letting down the lakhs of other readers who look up to us for doing what we do best. We will obviously try and improve quality, that's something we do on a daily basis - strive to improve. However, we will not become a science magazine, and will stay focused on the technology aspect, and continue in the spirit of teaching people to achieve (rather than just talk about) what's important.

*Robert*

These were some of my views towards Digit. I hope you would consider my suggestions.

*Vaibhav Jain*

■ Thanks for writing in with your feedback on Digit, Vaibhav. We always welcome constructive criticism, that's how we understand what our readers want and helps us make changes for the betterment of the magazine. We take pride in our magazine's design and content and the dash of humour scattered all over, it helps define Digit's personality to our readers. We promise to try and do something about the placement of advertisements in the future issues.

Fast Tracks are an integral part of the Digit experience, and they've been a resounding hit among our readers right from when they were debuted. Thanks for suggesting future topics, we will definitely look into them.

We go to great lengths to ensure our monthly DVD's content is fresh, interesting and diverse, so all of our readers can find something interesting there. It's unfortunate to learn you can't play the DVDs sometimes, please make sure you email us with any problems you face on the following address: [dvd@thinkdigit.com](mailto:dvd@thinkdigit.com). We will make sure such issues don't occur in the future.

We are trying very hard to ensure all our readers, including the ones who subscribe and the ones who don't, get the magazine on the 1st of every month, be it on the newstand or delivered to your doorstep. However, it's a challenge and despite our best efforts, circumstances beyond our control can hinder the timely delivery of magazines to all of you. But rest assured, we try our best to avoid any bottlenecks when it comes to getting the magazine out on time every month.

*Nimish*

### CORRIGENDUM

In the Tablet comparison test last month, we wrongly listed some features of ViewSonic's ViewPad. The device has an HDMI-out and 4 GB of storage. We apologise to ViewSonic and our readers for this error.





# WIN WIN

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McCann/GM/01/12

**Android 4.0 and Intel**

Intel expects Google's Android 4.0 a.k.a Ice Cream Sandwich to help propel the chip maker into the tablet market <http://bit.ly/wAg1We>

**FileSonic stops sharing**

After Megaupload.com's sudden shutdown, FileSonic is being cautious and has stopped users from sharing <http://zd.net/xfDxln>



# A technology extravaganza

This year's Consumer Electronics Show was nothing short of a whirlwind tour of the latest and greatest in electronic products and technology going to hit us in the coming months. Stalwarts of the industry and startups alike left no stone unturned to grab hungry eyeballs of the world's media assembled in Las Vegas, America's desert paradise. Here's what was big at this year's CES held between January 10 and 14

**Jayesh Shinde**

[jayesh.shinde@thinkdigit.com](mailto:jayesh.shinde@thinkdigit.com)

**Lenovo: All guns blazing!**

One company that made a big splash at this year's CES was Lenovo. The World's #2 PC manufacturer pulled out all the stops to announce and showcase over 20 products, including what the company calls its "halo products," that include the new 13-inch IdeaPad YOGA, an ultrabook and tablet hybrid with a patented hinge design, a 27-inch touchscreen-enabled all-in-one PC — the IdeaCentre A720 — which tilts to become a horizontal surface, and a hybrid 10-inch netbook-tablet product called the IdeaPad S210.

The YOGA ultrabook-cum-tablet product is a Lenovo exclusive product, in terms of design, since



## Samsung's Wi-Fi optical drive

Samsung introduced a Wi-Fi optical drive doubling up as a cloud storage, access point and for streaming media  
<http://bit.ly/z54siV>



Lenovo IdeaPad YOGA

its hinge is patented. It offers users the option of a touch-input tablet and a traditional keyboard-enabled operating environment on a Windows 8 operating system. The product weighs similar to a netbook and is slim and compact, in line



Lenovo IdeaCentre A720

with an ultrabook's dimensions. It's expected to launch soon after Windows 8 launches. The indicative price is \$1,199 or ₹60,000 approx.

Consciously trying to reposition itself as not just a PC maker but a personal technology and computing company, with products ranging from smartphones, tablets and TVs, Lenovo went on to unveil a first-of-its-kind 55-inch Smart TV called Lenovo K91. It's unlike

any TV we've seen before or anything available in the market — it has an IPS panel which offers great viewing angles and colour levels. The K91 supports 3D viewing, comes built with a dual-core 1.5-GHz Qualcomm Snapdragon processor and if all that wasn't enough, it also



Lenovo IdeaPad S2-10

runs Android 4.0 Ice Cream Sandwich. So yeah, it's definitely not your ordinary TV. What's more, the thing also comes with two remotes: one for flipping channels and the other a gamepad for serious gaming. We personally took Gameloft's



Lenovo K91 55-inch Smart TV

Asphalt 5 for a spin on the Lenovo K91, and enjoyed playing it with the dedicated gamepad. We also recommend watching the TV's demo videos included in this month's DVDs.

Those weren't the only products showcased at Lenovo's CES 2012 booth. Check out this month's DVDs for some exclusive video coverage of Lenovo's exciting products. We were also encouraged with the slew of ThinkPads that are set to launch later this year — one of which will sport a Thunderbolt port and high-end mobile processor for almost mobile workstation like performance.





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## Google to kill services

Picnik, Google Message, Continuity and Needlebase are just some of the services the search giant is weeding off this year <http://bit.ly/wELWuh>

## CPU + DRAM combined

Venray Technology, a CPU design firm, has managed to fuse together a CPU and DRAM on a single silicon die <http://bit.ly/zYoPih>

## Intel's assault on smartphones and tablets

This year's CES keynote delivered by Paul Otellini, President and CEO, Intel Corp., was a significant one. In Otellini's own words it signalled Intel's transition from "personal computers to personal computing," focusing not only on ultrabooks but also assaulting the tablet and smartphone market with its partners. To drive home the point, Otellini kicked off his CES keynote not with ultrabooks or PC computing but with Intel's focus on smartphone computing. Promising the audience that the best of Intel computing would now be available for smartphones this year, he went on to unveil the new Intel Reference Design Smartphone, kind of a platform to ensure the best end-user experience on a smartphone.

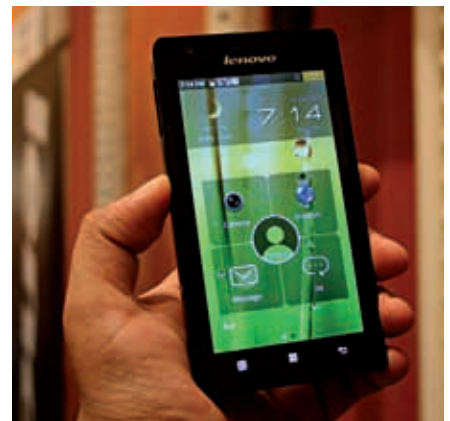
He invited on stage Liu Jun of Lenovo to unveil the Lenovo K800, the world's first Intel architecture smartphone to instant applause within the crowd. The phone is based on the 1.6-GHz Intel Medfield processor, has a 4.5-inch 720p display and runs Android 2.3. The Lenovo K800 also sports an 8 MP camera with support upto ISO 3200. It will be launched in China in Q2 of 2012 and shortly after in the rest of the world. Otellini also invited on stage Sanjay Jha, CEO of Motorola Mobility, to jointly announce a strategic, multi-year partnership under which Motorola will ship smartphones with Atom chips running on Android as early as the 2<sup>nd</sup> half



Intel announcing its intentions regarding tablets and smartphones at the CES keynote



Paul Otellini with an Intel Reference Tablet



Lenovo K800 sporting Intel Medfield chip

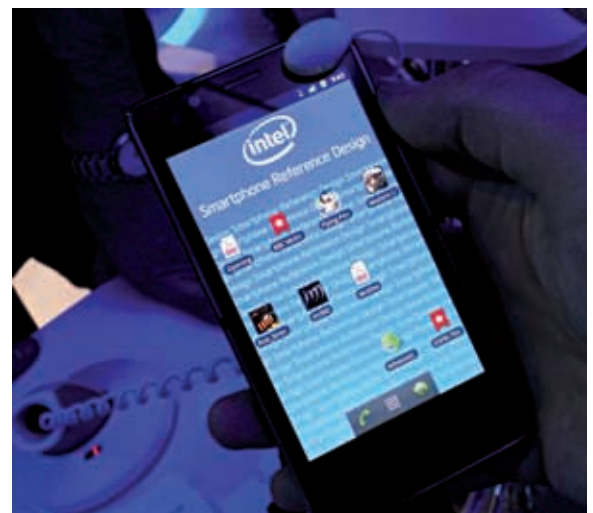
of 2012. So watch out for some cool new Droids running on Intel chips.

Otellini also revealed an Intel Tablet Reference Design with a demo model running a build of Windows 8 operating system. One thing's for sure, Intel's entry into the mobile

market signals a serious threat to the likes of Google's Android and Apple's iOS which is running away with market shares. Expect great things from Intel in the mobile space this year. Don't miss the exclusive keynote video on this month's DVD.



The Intel booth at CES Las Vegas Convention Centre



Intel Reference Design Smartphone handset



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## 2011: Ninth hottest year

According to NASA and NOAA, 2011 was the 9<sup>th</sup> hottest year on record since the last 130 years. It's getting hot in here! <http://1.usa.gov/wRjBGU>

## ReFS, a new file system

Meet the successor of NTFS called ReFS, standard in Windows 8. Read more about it on our web site <http://dvwx.in/feb12-refs>



Ryan Seacrest and Steve Ballmer, Microsoft's CEO, at the company's final CES keynote

## Microsoft's last hurrah!

Microsoft delivered its last official opening keynote at CES 2012, a tradition spanning back to 1995 when Bill Gates took the floor all those years ago. Steve Ballmer demonstrated, ably aided by senior Microsoft executives, the latest developments in Windows 8, Windows Phone and Xbox Kinect teams, leaving no doubt about the three key focus areas for the Redmond-based software giant in 2012.

In a sold-out Venetian ballroom, Microsoft CEO Steve Ballmer famously reprised his “developers, developers, developers,” call to arms from 2006 by stating the way ahead for Microsoft was “Windows, Windows, Windows!” Derek Snyder, from the Windows Phone team, wasted no time in providing a demo for Windows Phone with the newly launched Nokia Lumia N900 (the HTC Titan 2 was also spotted on the podium). He spoke about the people hub,

metro UI, Facebook and Bing integration, among other things. Tami Reller, Chief Marketing Officer, Windows team, delivered a detailed demo of the upcoming Windows 8 operating system and its unique features. She also reiterated that Windows 8 would run on both, x86 and ARM chipsets. She further went on to showcase two new ultrabooks: the HP Envy 14 Spectra and Samsung Series 9 15-inch ultrabook.

She was finally followed by Craig Davison from Microsoft's Xbox team, who demonstrated the fresh new metro UI of Xbox LIVE and its improved voice search through Kinect. She also demonstrated that the Xbox LIVE can be used via a Windows Phone, in this case the new Nokia Lumia N900. Kinect 2-way TV with Sesame Street was also showcased, highlighting the potential of creating interactive TV entertainment where users engage with the TV content like never before. Find these videos on this month's DVD and images at <http://bit.ly/yнкMql>.



Tami Reller with a prototype Win8 tablet



At Microsoft's booth at CES 2012

## Ultrabook, PC announcements galore

**1 HP unveiled its first ultrabook – the HP Envy 14 Spectre:** Features of the HP Envy 14 Spectre include a 14-inch 1600x900 pixel resolution display, Intel Core i5-2467M processor, 4 GB of RAM, a 128GB SSD, and a 9-hour battery life. <http://bit.ly/wR1SXX>

**2 Samsung highlighted refreshed Series 9 laptops:** The new 13-inch model measures 13 mm in thickness and weighs in at 1.1 kg, while the 15-inch weighs 1.6 kgs and measures 15 mm in thickness. <http://bit.ly/yduIle>

**3 Lenovo released host of IdeaPad ultrabooks, netbooks:** New products in the IdeaPad U Series, Y Series, S Series and Z Series provide a full spectrum of styles, colours and performance for every consumer. <http://bit.ly/yJfuwC>

**4 Dell launched XPS 13 ultrabook:** Will start at \$999 with an Intel Core i5 processor and 128GB solid-state drive. The elegance includes a CNC-machined aluminum display backbonded to the 13.3-inch LCD, which in turn is bonded to an edge-to-edge Corning Gorilla Glass cover for less flex and more durability. <http://bit.ly/zBjLJz>

**5 Acer announced world's slimmest ultrabook:** The new Acer Aspire S5 measures just 15 mm (0.59 inches) and sports a 13.3-inch LCD display. It weighs just 2.97 pounds. The Aspire S5 ultrabook will be available in the second quarter of 2012. <http://bit.ly/wF1CxT>



## World's largest game controller

A 116kg, 12-foot-wide classic NES controller was showcased in London recently, designed by an engineering student in Netherlands <http://bit.ly/AfRvez>

## SOPA, PIPA won't work

After being struck down, analysts weigh the pros and cons of the controversial anti-piracy bill which raged all along <http://bit.ly/wJVDYe>

Feature

## HDTVs: OLED, 3D, more...

Manufacturers like LG, Samsung, Sony and Panasonic came to the CES party with an armada of televisions and impressive tech. There were stunning OLED displays, 4K resolution prototypes and 3D TVs as well – all promising to deliver stunning visuals to your living room later this year.

LG showcased a mammoth 84-inch 4K prototype tele with built-in blu-ray player, apart from a beautiful 55-inch OLED display slated to hit stores later this year. We had a chance to play with some of these pro-



Panasonic Smart Viera Plasma TV

toype televisions at LG's humungous stall at CES' Las Vegas convention centre, and we were blown away with what we saw. Even LG's 3D experience (requiring 3D glasses to enjoy) was a breathtaking experience. We caught some of the action and have included the footage on this month's DVD. Not to be left behind, Samsung brought out its heavy artillery with a 75-inch Series 8 LED panel and a 55-inch OLED prototype with amazing brightness and contrast levels.



LG's 55-inch OLED 3D TV

The 55-inch form factor was the resounding sweet spot of the show with Sony displaying a 55-inch crystal LED HDTV. While Panasonic showcased its Smart Viera Plasma panels, Toshiba confirmed a 55-inch QFHD glasses-free 3D TV for shipping in the next couple of months. By all indication, the future of HDTVs looks impressive this year.

Don't miss some exclusive HDTV footage from the CES on this month's DVDs.



Samsung's 75-inch Series 8 LED TV

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## VGA, DVI to be phased out

Legacy connectivity ports like VGA and DVI will most likely not be supported in PCs by 2015, as HDMI and others become popular <http://bit.ly/AjaIII>

## PS4: Do's and don'ts

Veteran gaming journalist Chris Morris gives his insight on what Sony's next-gen game console should be like <http://bit.ly/yWphHg>

## New smartphones, tablets

The CES 2012 saw the unveiling of quite a few smartphones, despite Mobile World Congress taking place later this month. Prominent among the smartphone launches was the Nokia Lumia 900, unveiled on the eve of CES 2012. The 4.3-inch blown-up version of the Nokia Lumia 800 sports a WVGA (800x480) pixel resolution capacitive touchscreen display. The Gorilla Glass ClearBlack AMOLED panel looked quite good, we must say, having had a chance to play with the device at Nokia's official CES booth (video on DVD).

Other great handsets showcased at CES were the Motorola Droid RAZR with a 1.2-GHz chip and a 4.3-inch Super AMOLED screen; the Sony Ericsson Xperia Ion (video on DVD) with a 4.6-inch 720p display and a 12MP camera; the LG Connect 4G with a 4-inch NOVA display, dual-core 1.2-GHz chip inside and Android Gingerbread.



Nokia Lumia 900

Nvidia's Tegra 3 chipset debuted as expected at last month's CES, and the result was the initiation of powerful quad-core tablets. Acer and Asus took the early baton and led the charge with quad-core tablet offerings – the 10-inch 1.3-GHz Acer Iconia Tab A510 and the 1.3-GHz Asus Eee Pad Transformer Prime, both running Android 4.0 Ice Cream Sandwich. They both have 1GB DDR2 RAM and exceptional processing power – the Transformer was seen running *Elder Scrolls V: Skyrim* on it without a hitch!

Another notable tablet preview at the CES was of the Toshiba Portege M930, a 13-inch Windows 7 tablet with a keyboard and a rotating screen. The whole thing looked like a very large and cooler version of a slide-out keyboard smartphone. The Panasonic Toughpad A1 tablet running on Honeycomb was built like a tank and fully immune to water damage; while the



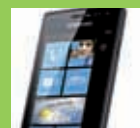
Lenovo IdeaPad K2110

Qualcomm Snapdragon S4 MDP with a 10-inch display and two 13MP 1080p cameras, and a 1.5-GHz SoC – they're found on such devices as the Asus Padfone and Lenovo IdeaPad S2.

The Lenovo IdeaPad K2110 was the first Intel Medfield Atom running tablet on display at this year's CES, it boasts a 10.1-inch screen, Android 4.0 OS, NFC, mini-HDMI, microSD slot, front and rear-facing cameras. Other specs weren't disclosed as this was just a prototype device.

We've barely scratched the surface here, but CES promised a bright tech future. 

## MORE FEATURES



**BEST SUB-20K SMARTPHONES AVAILABLE IN THE MARKET**

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## Best products of CES 2012

From giant multi-level booths with built-in coffee bars in the Las Vegas Convention Centre to stand-alone tables in hotel suites up the strip, CES had products of all shapes and sizes, and tonnes of them. What really matters are the ones we know will help set the tone for the industry in the coming 12 months. Allow us to cut through all the noise and break it down for you right here with the best products seen at CES.



**Best tablet:**  
Asus Transformer Prime TF700



**Best smartphone:**  
Nokia Lumia N900



**Best ultrabook:**  
Lenovo IdeaPad YOGA



**Best laptop:**  
Samsung Series 7 Gamer




**Best desktop:**  
Lenovo IdeaCentre A720



**Best HDTV:**  
55-inch Samsung, LG OLED TV and 55-inch Sony Crystal LED TV





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# The incredibly useful smartphone apps

Thought you'd seen them all? We bet you've not downloaded these, yet!

Vishal Mathur

[vishal.mathur@thinkdigit.com](mailto:vishal.mathur@thinkdigit.com)

**T**his month on App Watch, we take a look at some of the apps that you absolutely should have on your smartphone. Some add a dollop of additional functionality, while others are fun to use as well. Since all of them can be downloaded for free, we urge you to take them for a spin.

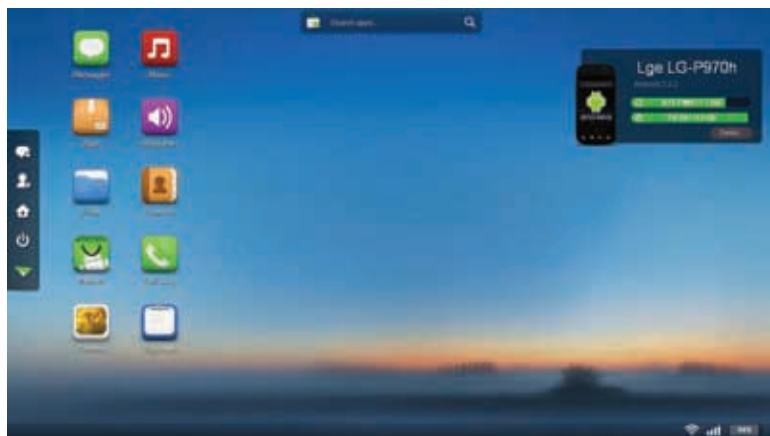
## Extra assistance while driving iOnRoad Augmented Driving

**Available for:** Android

**Price:** Free

This app is possibly the perfect driving companion, apart

from a GPS navigator. Requiring the phone to be mounted on one of the universal windshield mounts, the app keeps an eye on the road in front via the camera. There will be a loud beep alert as well as a text alert on the display when the distance to the car in front becomes uncomfortably less. There are two settings for the distance which you can preset. The camera needs to be in a clear line of sight for this to work. However, it detects vehicles and objects in a V angle only, beyond which everything is a blind spot. While you should be attentive at all times while driving, we think this app can be very useful in case you just take your eyes off the road for a second, and something pops up in your path.



The one size fits all desktop access for Android phones

Not only that, iOnRoad can also be set for speed alerts that notify you the moment you go above the limit. It's more of an annoyance usually, and is better turned off. The SMS Reader feature is immensely useful though. You can set iOnRoad to route all calls to the speaker while driving. The auto driving detection feature automatically starts up the app when you start driving, if the phone is in the mount on the dash. You'll need to buy a universal mount to put this phone in, for your car. There are a lot of them available in retail stores and online shops.

## Can't find that data cable

**AirDroid**

**Available for:**

Android

**Price:** Free

Accessing the data on Android phones

can be a very painful experience, particularly if you're using Mac OS, or if you don't have a data cable readily available. AirDroid is a must-have app in such a situation. Open AirDroid on your Android phone, then enter the given web address in a browser on any PC connected on the same Wi-Fi network and enter coordinates the app throws up. Enter the auto-generated password and voila! All phone data is right there – contacts, messages, media, apps, capability to send a message, copy data to and from the device and even browse and downloads apps from Android Market.

## Free calls and messages

**Viber**

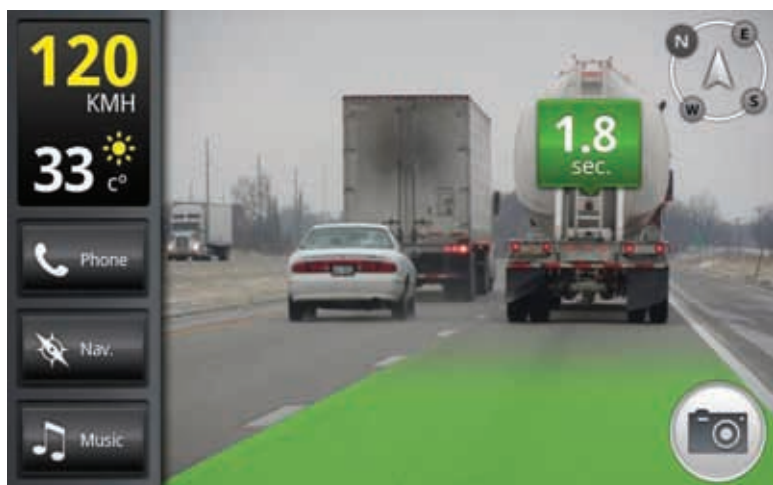
**Available for:** iOS

and Android; Coming

soon on BlackBerry

**Price:** Free

This is something of a mix of two apps that you may already



Another eye on the road, for your safety

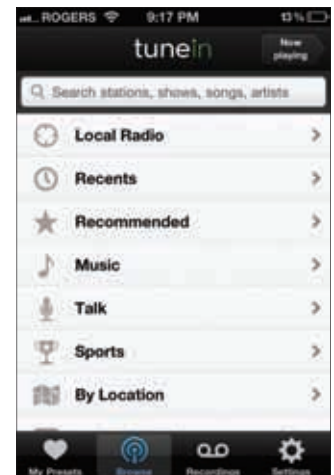
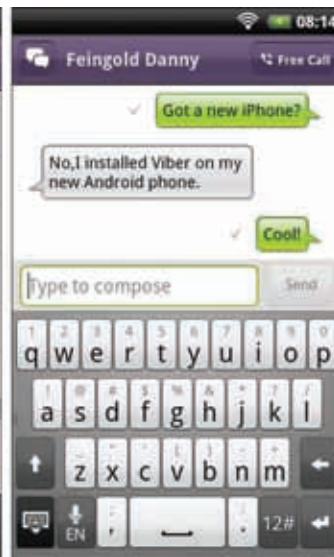


## Create your own QR code

Forget those boring black and white Quick Response codes with these possible modifications

## Linux Kernel 3.2 released

Linus Torvalds announced the release of Linux Kernel version 3.2 <http://bit.ly/zUJriv>



Radio is never boring

Does a WhatsApp, and then some

have on your phone – WhatsApp and Skype. Viber allows free voice calls and messages between Viber users, no matter what the phone platform. Much like WhatsApp, Viber will scan the phone's contact list to see who all are signed up on Viber and automatically add them to your Viber contacts. The Viber-to-Viber calls and SMSes work over 3G and/or Wi-Fi.

### Early warning Winter Wake Up

**Available for:** iOS and Android

**Price:** Free

What if it was a clear but chilly winter weather when you slept, but changed to snowy late at night or early in the morning? This is the app that does the checking for you. Winter Wake



Make your boss download this app, right now!

Up will check the weather online some time before the alarm time that you had set,

and modify your alarm time if it's snowing or if there's frost. You can set the time by which the alarm will be preponed in either weather condition. There's also a setting for "don't bother to wake me..."! You should download this app, just for the winters.

### Online radio, the best TuneIn Radio

**Available for:** iOS, Android, BlackBerry, Windows Phone, Bada and Palm

**Price:** Free

Online radio is quite a rage, considering the sheer number of apps flooding the app stores on literally every platform. With over 50,000 radio stations, TuneIn is by far the best radio app for smartphones.

The free version has absolutely no limitations, while the Pro version just adds the record feature on iOS, Android and BlackBerry. ■

## MORE NEWS



HTC EDGE QUAD-CORE SMARTPHONE TO ARRIVE AT MWC, FEB 2012 IN BARCELONA

<http://bit.ly/ww7ZgH>



INDIAN GOVERNMENT INTENDS TO MAKE ITS VERY OWN APP STORE LIVE SOON

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**H2O WaterBlock technology**

Samsung and Apple will apparently be using the revolutionary new H2O WaterBlock technology, to completely waterproof their devices. <http://bit.ly/ydujMC>

**Tizen's Future Gets Brighter**

Samsung has announced they will be merging their home-grown mobile phone OS, bada, with Intel and Linux-partnered Tizen. <http://bit.ly/zmyWgK>

## Delhi to get radiation tags for mobile phones

In a campaign against rising mobile radiation health concerns, the Delhi government has made it mandatory for all mobile phone manufacturers to display the radiation level emitted by their devices. The decision was made during a meeting between the state health department, Indian Council of Medical Research (ICMR), Jawaharlal Nehru University and WHO in Delhi.

State Health Minister AK Walia, who presided over the meeting, also decided to put some restrictions on the mobile phone towers across Delhi, and urged Centre to draw up guidelines for mushrooming towers. Experts are now mulling over ways to incorporate the pro-



posed reforms from Delhi government into the present guidelines. Hopefully, the Centre will come up with pan-India guidelines soon. ■

## RIM co-CEOs step down, COO steps in

Research in Motion announced a major change to their corporate hierarchy late yesterday, with COO Thorsten Heins replacing co-CEOs Jim Balsillie and Mike Lazaridis at the top as the new President and CEO of RIM. Balsillie and Lazaridis, apart from being co-CEOs, were also co-chairmen for nearly 20 years. Lazaridis will now become the vice-chairman, and Balsillie will remain a board member.

Speaking to the press, Balsillie and Lazaridis said that

the two suggested the leadership change to the board themselves, and that their current strategies will see continuity under Heins. They reassured shareholders that RIM's major projects for 2012 are still on track – specifically, the new PlayBook, the new QNX-based BlackBerry 10 operating system, and its platform lead device.

Heins clarified that there are no plans for putting RIM on sale, and that the company is hoping the new BB10 operating system is a big enough hit to even be licensed to other vendors. ■



Thorsten Heins

## Android 4.0 ICS style guide phones

Google has written a style guide for Ice Cream Sandwich, hoping to help developers and device manufacturers create apps and user interfaces that are optimized for both tablets and smartphones. The style guide is called Android Design.

According to Android Developer Blog, Android Design is a “place to learn about principles, building blocks, and patterns for creating world-class Android user interfaces. Whether

you're a UI professional or a developer playing that role, these



docs show you how to make good design decisions, big and small.”

The recommendations supplied in the style guide are

optional, however, Google's intention is clear – it's trying to ensure that future Android apps and custom user interfaces from manufacturers will work well in terms of user experience, regardless of differences in display sizes and other hardware features. The aim is to make the Android

platform less fragmented as a whole, even within the unified Ice Cream Sandwich version of the operating system. ■

## Nokia says 3G tariffs need corrections

Jasmeet Gandhi, Nokia India's head (services marketing) said that the 3G pricing in India has to be “corrected” to ensure that it is affordable for the lower-end consumers. “A lot of consumers in India want to future proof themselves in terms

of technology at the right price point. So when the pricing of 3G will be affordable, they will definitely go for it. And we have seen this happen in many categories”, Gandhi said. He also pointed out that the 3G technology was meant to “revolutionise” mobile experi-

ence by giving high-speed Internet and facilities such as video-calls, interactive gaming and mobile TV. The actual number of the 3G users is lesser than the expectations. Gandhi, however, turned down speculation that hefty prices of 3G services were hampering the

sales of smartphones. “Because people who buy smart phones at the high-end can afford 3G...It is not an issue. I think in smart phones segment 3G penetration is very decent.” he stated, adding Nokia is investing on 3G phones as well. ■





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## Social media fading away?

According to a survey on 2,000 youngsters in India's metros, users are spending lesser and lesser time on social networks <http://bit.ly/xN05ZV>

## Apple iBooks 2

Following Steve Jobs' vision of reinventing education, Apple has launched the iBooks 2 app, iBooks Author tool, and iTunes U <http://bit.ly/ytG7mA>

# Don't be evil, just vandalise

Google has been accused of vandalising maps of the OpenStreetMap project, a crowd-sourced project run by a UK-based non-profit firm. Malicious edits were made to a few of the wiki-style maps, and while these are definitely not irregular occurrences for an open project, the editing users were traced to an IP address range belonging to Google India.

Three senior members of Google Maps' rival, OpenStreetMap (OSM) project, announced the incident on



a company blog post, titled "Google IP Vandalizing OpenStreetMap".

OSM alleged that Google's presence on its web site by these particular users was quite strong in January and it could possibly take them some time before a full analysis is done. In fact over the past year, it has had over 102,000 hits on OSM thanks to at least 17 accounts from this Google IP.

Responding to the allegations, a Google spokesperson said that it had identified the two people behind the OSM accounts, and claimed that they were just contractors using machines on Google's network. The contractors were apparently "acting on their own behalf" and are "no longer working on Google projects."

After a similar Mocality incident earlier this month

from the same IP address range, it certainly is surprising that Google didn't tighten up practices. So far, the majority of the web pundits believe that Google wouldn't be so reckless to blatantly tamper with its Google Maps competitor. OSM founder chairman, Steve Coast, admitted to finding the Google link to

its tampered maps perplexing.

"These actions are somewhat baffling given our past good relationship with Google which has included donations and Summer of Code work. As a community we take the quality of our data extremely seriously and look forward to an explanation from Google and an undertaking to not allow this kind of thing to happen in the future.", said an OSM representative. ■

## MegaUpload shutdown, Anonymous retaliates

The U.S. Department of Justice (DOJ) announced that it shut down Megaupload, the one-click hosting online service and charged its members on five counts of copyright infringement and conspiracy by trafficking and hosting pirated image and video content. Four out of seven of the site's owners and operators have been arrested.

Meanwhile, hacktivist group, Anonymous retaliated to the Megaupload closure by shutting down the web site of the DOJ, Universal Music Group, MPAA, RIAA and U.S. Copyright office on 19<sup>th</sup> January. The group called it the single biggest strike in its history. ■

## Even passwords won't help you

Wi-Fi users in the country are vulnerable to virus attacks, warns Indian Computer Emergency Response Team (CERT-In). The firm has discovered that the Wi-Fi Protected Setup (WPS) has a design error, increasing risks of virus attacks that potentially allow attackers to take control of even a password protected system.

The CERT-In alert to consumers read: "The virus is streaming in the Indian Internet networks with a high severity. The combat mechanisms are



being deployed. An unauthenticated, remote attacker within range of the wireless access point could use the PIN (password) to gain unauthorised access to the device to retrieve the password for the wireless network or change the configuration of the device. Failed

attempts to exploit the vulnerability could lead to a denial of service condition."

The agency also pointed out its reports that revealed several WPS devices do not feature any kind of lockout policy for such attack attempts. Users in India mostly use the WPS method to set up a wireless router for home network. The WPS procedure requires a PIN to be used during setup. The CERT-In alert elaborated that users should disable the external registrar feature of the WPS to protect their devices from virus attacks. ■



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★ Market research from The NPD Group, Inc. Sep, 2011



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**Cube Attaché**  
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**Lovely Attaché series**  
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**Micro Attaché**  
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**Authorized Partner**



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**v155w**  
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**v165w**  
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**v210w**  
2~32G



**c335w**  
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[www.pny.com.tw](http://www.pny.com.tw)

**Petition for Dark Souls on PC**

Namco Bandai, the company behind the game will make a PC port of the game if there are enough petitioners  
<http://bit.ly/xMF2wL>

**USB 3.0 on tablets and phones**

USB 3.0 to get a slimmer form factor enabling adoption tablets and phones  
<http://bit.ly/y8da46>

# Make your own QR code

Forget those boring black and white QR codes, add some colour and customize your very own hip QR codes

Nimish Sawant

[nimish.sawant@thinkdigit.com](mailto:nimish.sawant@thinkdigit.com)

Quick Response codes or QR codes are slowly but surely becoming mainstream what with every other person sporting a smartphone with a decent camera these days. It is the most convenient way to go from an offline to an online experience. You just have to focus your phone camera on the QR code and you're automatically taken to the QR code's embedded destination (mostly a hyperlink).

Nine out of ten times, you'll notice a QR code in its black and white avatar and this could be boring. So can you really change that colour combination? Add your personal touch to a QR code?

Yes, you can.

In this tutorial, we'll show you how you can change the colour of your QR



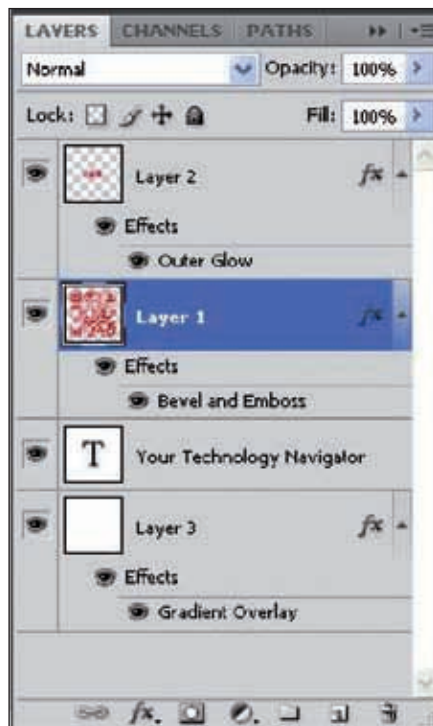
Original QR code with black color



Original QR code changed to red color

code, add a personal logo bang in the middle of the code and even smoothen the sharp edges of the squares and rectangles that comprises of the QR code.

There are many web sites such as <http://goqr.me/> to help you generate your QR code. You can program the QR codes to lead the scanner to a URL, phone number, text or even a visiting card. We decided to stick to the URL of our web site: [www.thinkdigit.com](http://www.thinkdigit.com)



You can even apply an emboss effect

Select the URL tab on the QR code generating web site and enter the URL: <http://thinkdigit.com>

Move the slider alongside to a size of 300x300px. Under "Options" select the Error Correction Code as Q. You can change the Data Pixel colour to one that you like from its swatch. Though there's no rule saying that the background must be white, there has to be a strong contrast between the background and the code for the phone camera to be able to scan it easily.

Once the QR code is generated, all you need to do is download the file for further editing. You can use any advanced image editing program.



Embossed image



With the Digit logo

We used Photoshop, and here's what we did. We first opened a layer and superimposed the QR code on it. We then unchecked the background layer, leaving us with the white background of the QR code. To remove it, you need to convert the image to a Smart Object. Then click Select menu > Color Range and keeping all things constant select the white colour and hit delete. Now you'll just get the QR code. Recheck the background layer.

We tried adding an inner embossing on the code, while constantly checking if the QR code is still pointing to the web site, else you need to go slow on the modifications or even undo a few changes, so take care.

We then added the Digit logo in an image layer and gave it an outer glow. It was placed in the centre.

The tricky part was adding a gradient on the background. After a lot of trial and error with different colours, the blue/light blue combo seemed to work for us.

On a text layer we placed "Your Technology Navigator" below the QR code.

Behold! Our final image.



With gradient



Final image - with gradient and tagline

There's so much more you can do with the QR code to personalise it. Google QR code enthusiast, Patrick Donnelly's Farmville design, which he spent months "growing". You can even arrange real-life objects such as music instruments, animals, cartoons, etc into a scannable code. Up to 30 per cent of the QR code image can be removed and replaced with an embedded image while ensuring that the code is still stable. Let your imagination run wild... ■



# pulsar

## 10 YEARS OF LEADERSHIP



**2011**

India's No.1 Sports bike got sportier with stylish Speedlines that took the total number of Pulsars on road close to **5 million.**

**2010**

2010 saw the birth of a new 135cc Pulsar powered by a 4 valve DTS-i engine. It introduced more bikers to the thrill of biking, taking the number of Pulsars on road to over **4 million.**

**2009**

As it crossed the **3 million** mark, the Pulsar twins got more power and more features. The Pulsar 220cc carb version was introduced, aptly called "The Fastest Indian".

**2007**

The Pulsar roared through the 200cc barrier creating a new generation of bikes and bikers. The 200cc Pulsar with a meatier exhaust and aggressive looks, followed later by the 220cc DTS-Fi set the pulse of bikers racing.

**2006**

For the first time in any sports bike in India, digital speedometer, back-lit switches, self cancelling indicators, LED tail lamps were introduced. Pulsar sales crossed the **1 million** mark. The Pulsarmania had begun.

**2004**

The Pulsars got 17" alloy wheels, nitrox suspension and the patented 'ExhaustEC' technology. Styling was cutting edge with an "all black" Pulsar featuring a broader rear tyre and tyre huggers.

**2003**

The revolutionary DTS-i technology was introduced. The Pulsar twins quickly ruled the hearts of bikers across the nation, outselling competition by over **3 times.**

**2001**

The birth of the Pulsar twins created a whole new segment called sports biking.



# IS THE IMPOSSIBLE POSSIBLE?

The mission, which we chose to accept, is to analyse the technology showcased in *Mission Impossible IV* and see how it compares with current generation technology. Here are our findings. Warning: Spoilers ahead

Anirudh Regidi

[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

Most of you must have watched the latest *Mission Impossible* movie by now, either in theatres or by, ahem, other means. Being Digit readers, your eyes must have surely first fallen on the tech (shame on you if they didn't), ours did and we immediately fell into a deep discussion regarding it. Does this tech really exist? In fact, can it exist? Read on to find out.

## Orders that self-destruct

Now this is interesting, a staple feature in all the *MIIV* movies so far. What we couldn't figure out was why it had to be so complicated? Think about it, would you ever want to be so close to an explosive device, something you know is going to blow up when the sound stops? A ticking time-bomb anyone? Of course, Ethan Hunt, who is a shrewd and cunning agent with nerves of steel, a heart of gold and pearly white teeth, wouldn't hesitate. But who would actually want to wear a pair of sunglasses when they know it's filled with explosives? We wouldn't, not voluntarily anyway.

For an agency which makes the impossible possible, making sure that the explosive only goes off at exactly the right

Sugarcoated instructions, anyone?

time is a walk in the park. For us mere mortals there's a simpler solution. Why not just inscribe the message on chocolate? Imagine the following scenario, agent goes to vending machine, taps in a long and complicated code. Out pops the chocolate, agent reads it, assimilates message and chocolate. Clean and simple. No mess, no hassles and the agent gets to eat delicious chocolate (it better be, he is risking his life for his country after all) in the bargain. It also won't draw as much attention as an exploding telephone.

## We say

It seems to be nothing more than just a theatrical and overtly complicated way of doing a simple job. Guess the IMF is called the "Intelligent Mission force" for a reason!

## Look, Spiderman!

You'll remember the scene where Ethan Hunt goes scrambling around the Burj Khalifa like a lizard on steroids, using nothing more than a pair of grippy shoes and some super-grippy gloves equipped with weird, glowing LEDs while emitting an electronic buzz.

Firstly, what's the point of stealth when you're wearing buzzing gloves which glow. Suction cups would have probably served better, especially on a glass surface. Secondly, was the Burj Khalifa empty that nobody noticed at least the silhouette of

Ethan Hunt as he flailed around on the outside of the window?

Incidentally, the gloves worn by Ethan Hunt actually exist. These gloves are better known as Gecko gloves, whose design is based on the feet of, well, geckos. Contrary to what you may expect, the gecko doesn't just specialise in licking its own eyeballs, its feet are masters of adhesion and can, in theory, cling to the outside of the International Space Station with as much ease with which it clings to glass on Earth. There's a force called the "Van Der Waal's force", which comes into play when two surfaces are in contact. This



A variety of hairy gecko feet

force is so weak that even the extremely weak electrostatic force of attraction between a charged glass rod and piece of paper is many hundreds of times stronger. Basically, the more the area in contact, the more the attractive force. That's not to say that you'll get stuck to your bed and find it difficult to get up (no, you can't attribute your inability to get off the bed





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## Yet another roadmap leak

Sony's 2012 smartphone roadmap leaked, complete with Indian prices

## Facebook Timeline's new apps

Facebook has introduced 60 new Timeline apps, allowing users to share photos, travel destinations and more on their new profile

in the morning to this). This is because the actual area in contact when you place your hand on a surface, or your back on the bed, is a miniscule fraction of the area that can be in contact, sometimes less than even 10 per cent. You may have the largest hands in the world, but your hands are made up of many ridges and valleys, especially at a microscopic level, the same goes for the surface you are in contact with. Due to this, even though your hand seems to be in contact with the glass window, it's actually floating on a bed of "pins and needles". The gecko ensures better area of contact as it has hairy toes, and not just any hairy toes. Each foot can have up to half a million hair on them. The ends of these hair are also split. What does all this add up to? A foot that's capable of holding up more than 500 times the gecko's weight. Now you may be wondering why a gecko doesn't just get stuck to the floor or wall the moment it's born. I mean, if its feet really are that sticky, won't it be impossible to pry them off? This doesn't happen because the "adhesive" is a directional one. There are only sticky when force is applied in one direction, allowing a gecko to "peel off" from the



Maybe someday we'll be able to lick our own eyes like this inspiring creature

floor and proceed without ripping its feet off. There's a method to this, which even an agent of Ethan Hunt's caliber had to be explained when using the gloves.

The gloves are based on the same principle. They consist of rubber or plastic (or any material in fact) covered with a mass of hard-plastic microfibres which mimic the surface of a gecko's foot. This material is very sticky and has the same directional adhesive property. But, to support a man weighing in at 70 kg, you would need an area of contact amounting to a 10x10cm patch. There's obviously a lot of room for improvement, especially if you consider that nature's design ensures that 20 square cm can hold 130 kg. All this without the need for fancy lighting and the weird electronic hum.

simple matter of surface contact. Maybe the IMF rigged up some sort of electrostatic charge inducer or something to improve the efficiency of the glove. Who knows? Anything is possible.

## Smart car fine, but a smarter man?

Who can forget Ethan Hunt's futuristic Beemer? A garish supercar with flashing lights and transparent panels. Is that really what an undercover spy needs on his sojourn to a foreign land? That too in a country known for its speedbreakers and potholes. We think this agent didn't do his research properly. It's possible that it was a stroke of brilliance on the agent's part, as Sherlock Holmes once said, "It's so ostentatious that it's surreptitious". Maybe we're doing the agent an injustice.

The car in question actually exists and even more importantly, BMW actually plan to put it into production. You can read more about it at <http://bit.ly/zopzSM>. The car doesn't come with the fancy radar and smart display and most probably the fancy design will be replaced with a more sedate one for now. It's a very interesting car however, having both, a fuel-cell powered electric motor as well as an IC engine. The smart window seemed to work quite well in the movie but practically it seems to have too many flaws. The fact that a map shows up on the screen is interesting and so is the fact that people and obstacles



Augmented reality is fine, but you don't want this while driving

## We say

The technology exists, but is still a few years away from making human spiders a reality. *MI IV* did use existing technology but the reason for the lights and hum is beyond us. Especially the reason why one of the gloves failed when it's a



## iPhone 4S jailbroken

Full untethered jailbreak for iPhone 4S is here. Enuf said!

## Note crosses one million sales

Samsung Galaxy Note crosses 1 million units sold in two months <http://bit.ly/x2erZt>

Geek Life

are highlighted, but would you really want to keep leaning forward to interact with your windscreen while driving the car at breakneck speed in the middle of heavy traffic while wearing a seat belt? Try it, it's harder than it looks, or rather, don't try it, you'll end up smashing into something or worse. The red "obstacle alert" system also looked interesting in the movie but it would really end up being more of a hindrance or distraction than anything else when all it does is flash red and fill up half the screen with red and white lights.

### We say

The car exists, the technology exists. It's only a matter of time before it goes mainstream. Not in the way it's demonstrated in the movie though. There are too many issues with that to allow for a safe and practical driving experience.

### Eye see you

The contact lens used by William Brandt to take images of the Russian codes is a fascinating piece of technology. It was one of the few pieces of tech in the movie that caught our eye. Wearing just a contact lens and still getting an augmented experience of the world is a very interesting concept and one that isn't far from reality.

The fact that you can just look at a face and get details about the person on a mobile device might seem intrusive in a way. It's like taking cyber-stalking to the next level. Of course, if everybody starts wearing these, you won't need to keep drawing yourself up to your full height



BMW i8 – a concept car very similar to Hunt's futuristic beemer

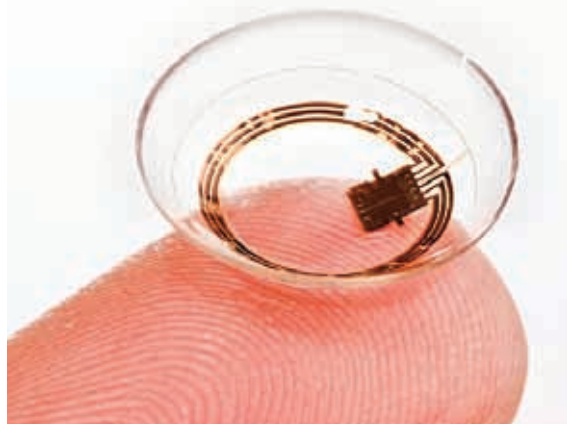
just to explain who you are. Scientists have found a way to embed miniature circuits in contact lenses and have also managed to transmit data to and from the lens. The outer ring of the lens can be lined with a fine, wireless antenna, with the circuit embedded in the middle. Scientists have managed to take the design one step further by focusing an LED mounted on one of the lenses onto the retina. This is much harder than it sounds as it involves a lot of micro-lenses being manipulated at a microscopic level. This means that you can have, say, one eye with a mechanism for taking images and transmitting it to a mobile device like your phone, while the other can be set up to display the processed data directly on your retina. If only the IMF knew of this tech, Trevor wouldn't have wasted time on his phone and would probably be alive and kicking today.

### We say

One of the most fascinating pieces of technologies showcased in the movie. The technology is still many years away from fruition, but the concepts are solid and the prototypes have shown what can be done with it.

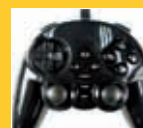
There was a lot more tech present in the movie but most

of it is beyond the scope of this article. The very fact that technology has evolved to such an extent that the imagination of directors and writers is put to the test is in itself an achievement of sorts. A couple of years ago, most of this technology would have seemed impossible but now, it's just around the corner. ■



Miniature circuits embedded in contact lenses

## MORE FEATURES



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This translucent cricket-ball sized orb may look like a child's play thing, but it packs in quite a punch in terms of technology.. You basically control Sphero via bluetooth from your iOS or Android-based smartphone or tablet. Capable of producing millions of colours on its surface, it reaches speeds of up to three feet per second. Precise control is achieved with the integrated gyro, accelerometer and compass. A host of apps centred around Sphero are available on the respective app stores. Priced at roughly ₹6,530, it won't have you diving too deep into your pocket.



# Products from **CES 2012** that'll make you go "whoa!"

**Powertrekk**

Power cuts are common in our part of the world. But next time, instead of cribbing about the lack of basic amenities, you can charge your phone using water. Yes, you read that correctly, we said "water". Perhaps the best gadget to be showcased at CES, Powertrekk from MyFC produces power equivalent to four AA batteries using just a tablespoon of water. You can charge your gadgets or external batteries. The magic happens in what MyFC calls the power pucks which are made of a material called Sodium Silicide, which reacts with the water to produce electricity. One such fuel cell costs ₹15,000 and the puck used for recharging costs ₹150 each.



## Stylus for the iPad

Ten One Design unveils Sketch Plus with the revolutionary Pro Tip technology which can even work on an iPad  
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## Electric fire extinguisher

DARPA develops a new flame suppression technique, kills a flame using electricity  
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Drool maal

## HP Envy Spectre

For this particular ultrabook, HP seems to have gone ga-ga over Gorilla glass. Nearly the entire notebook is made of glass – the lid, the palmrest and of course the trackpad – a far cry from the MacBook Air's aluminum unibody. It's packed with a second-generation Intel i5-2467M processor, 4 GB of RAM, NFC capabilities, Beats Audio and a 14-inch Shuriken screen. This sleek monster made of glass will lighten your pockets by a mere ₹70,200 – a steal, really!



## Razer Project Fiona

Somebody at Razer got a crazy idea of compacting an entire gaming PC into a tablet, and the result: Project Fiona. This tablet is powered by an Intel Core i7 and runs Windows. It features a 1280x800 screen, Dolby 7.1 sound and a full screen hybrid user interface. It also has two dualshock controllers on either sides of the screen, a three-axis gyroscope, magnetometer and accelerator. In case you're thinking of lugging this monster to your next LAN party, you're in for some disappointment as this is just a prototype and it will be some time before you see Fiona in stores.



## Mercedes F125

The only thing this car lacks is flux capacitors. The F125 features a hybrid electric/hydrogen propulsion along with e4MATIC all-wheel-drive. The design is absolutely stunning with the gullwing doors opening into the front and rear passenger cabins. The interiors sport a futuristic look with touch, speech and gesture controls for the car's various functions. Though you'll have to wait for quite a while to get your hands on one of these babies, as this is a prototype of how cars will look in 2025.



# TURBOCHARGE YOUR GAME EXPERIENCE

## SLI

Scalable Link Interface is NVIDIA's multi GPU technology. It's no secret that this technology is focused towards power users. The average consumer has no need for multiple GPUs. With multiple GPUs comes the



task of processes scaling properly. This task is more dependant upon the particular application that is utilising the GPUs. NVIDIA releases drivers on a regular basis to keep up with the multitude of applications that require more powerful processing solutions. Whenever a new game is released NVIDIA releases new drivers which enables better scaling. However, SLI can also provide for an economical way to increase performance for the average user. By getting a GPU of the same series as the one currently owned rather than going in for the newest card on the market, a user can gain a great performance boost for much less cost. *STALKER: Call of Pripjat* showed an performance increase of over 100%. Right now one can use 4 graphics cards in Quad-SLI configuration. By using the right profile one can achieve much higher performance, what's more is that you can create your own profile using NVIDIA's control panel or you could use Coolbits to tweak your graphics cards.

## WE TRY TO DEMYSTIFY CERTAIN GRAPHICS SPHERE RELATED JARGON AND TELL YOU HOW THEY ENHANCE YOUR OVERALL GAMING EXPERIENCE

## ANTI-ALIASING

NVIDIA's latest anti-aliasing algorithm is called FXAA (Fast Approximate Anti-Aliasing). It is a single-pass pixel shader which runs in the post-processing stage. Compared to older algorithms, it is faster, uses less memory while compromising in precision and quality. It has been shown to offer better results than 4xAA using older gen algorithms. The technology is not specific to NVIDIA's GPUs alone, its competitors can make use of the algorithm too as it is independent of any GPU API. FXAA has the logic to reduce single pixel and sub-pixel aliasing which is usually evident by flickering. FXAA can be used to vary the contrast of single pixel and sub-pixel elements. Also FXAA is title specific, thus giving the game developers to choose as to how the algorithm must be applied. Since the higher rendering speed comes at the cost of losing quality, the developer can make an informed decision as to where they can perform the trade-off over quality. There are multiple versions of FXAA, the latest iteration has two versions, one for PC and the other for consoles. Overall, this higher control offers a much better visual treat.







## TESSELLATION

In its most basic form, tessellation is a method of breaking down polygons into finer pieces. For example, if you take a square and cut it across its diagonal, you've "tessellated" this square into two triangles. By itself, tessellation does little to improve realism. For example, in a game, it doesn't really matter if a square is rendered as two triangles or two thousand triangles—tessellation only improves realism if the new triangles are put to use in depicting new information, which is done by displacement mapping. Displacement mapping stores the height of each vertice and thus we get a 3D layer. Tessellation has been around for some time but for proper realism there had to be a lot of vertices to be present. Earlier, GPUs in general lacked computational power which is now easily available. With DirectX 11, Tessellation became more mainstream and optimised. NVIDIA GPUs from the GeForce 400 series have proven to show upto 100% enhanced output in comparison to its competitors. With the newer generation of GPUs coming up, gamers are in for a great treat.

## 3D VISION 2

Three years since their 3D Vision technology premiered NVIDIA recently launched the next iteration, 3D Vision 2. An upgraded battery (approximately 60 hours), compatibility with previous generation technology, larger glasses (approximately 20% larger) and better integration are amongst the highlights of the new release. Bigger glasses mean a bigger frame which in turn translates to



lesser unwanted light creeping in from the periphery. The glasses have a range of up to 15 feet. Also, the glasses come with a USB 2.0 micro port. A few monitor manufacturers have even integrated the IR transmitters into a few of their models. The glasses remain to be shutter based which have an inherent flaw of blocking too much light and thus the images appear way too dark. 3D Vision too comes with a new technology called 3D LightBoost which tries to mitigate the issue of dark playback. However, for proper implementation of the technology requires modification of the monitor's hardware. With over 600 titles utilising this technology and many more adopting it, an endless stream of 3D entertainment awaits.

## ANISOTROPIC FILTERING


Anisotropy is the quality of possessing dissimilar coordinate values in a space, which applies to any texture not displayed as absolutely perpendicular to the camera. Anisotropic filtering improves the clarity and crispness of textured objects in games.

To simultaneously preserve performance and image quality, mipmaps are used; mipmaps are duplicates of a master texture that have been pre-rendered at lower resolutions which a graphics engine can call when a corresponding surface is a specific distance from the camera.



With proper filtering, the use of multiple mipmap levels in a scene can have no discernable impact on its appearance while greatly optimizing performance.

Bilinear filtering serves as the default, being the simplest and computationally cheapest form of texture filtering available due to its simple approach: to calculate a texel's final color, four texel samples are taken from the mipmap defined by the graphics engine at the approximate point where the target texel exists on-screen, which will appear as a combined result of those samples' color data.

Anisotropic filtering can be controlled through the NVIDIA Control Panel within the 3D Settings section, however for the best performance and compatibility NVIDIA recommends that users set this to be controlled by the application. 

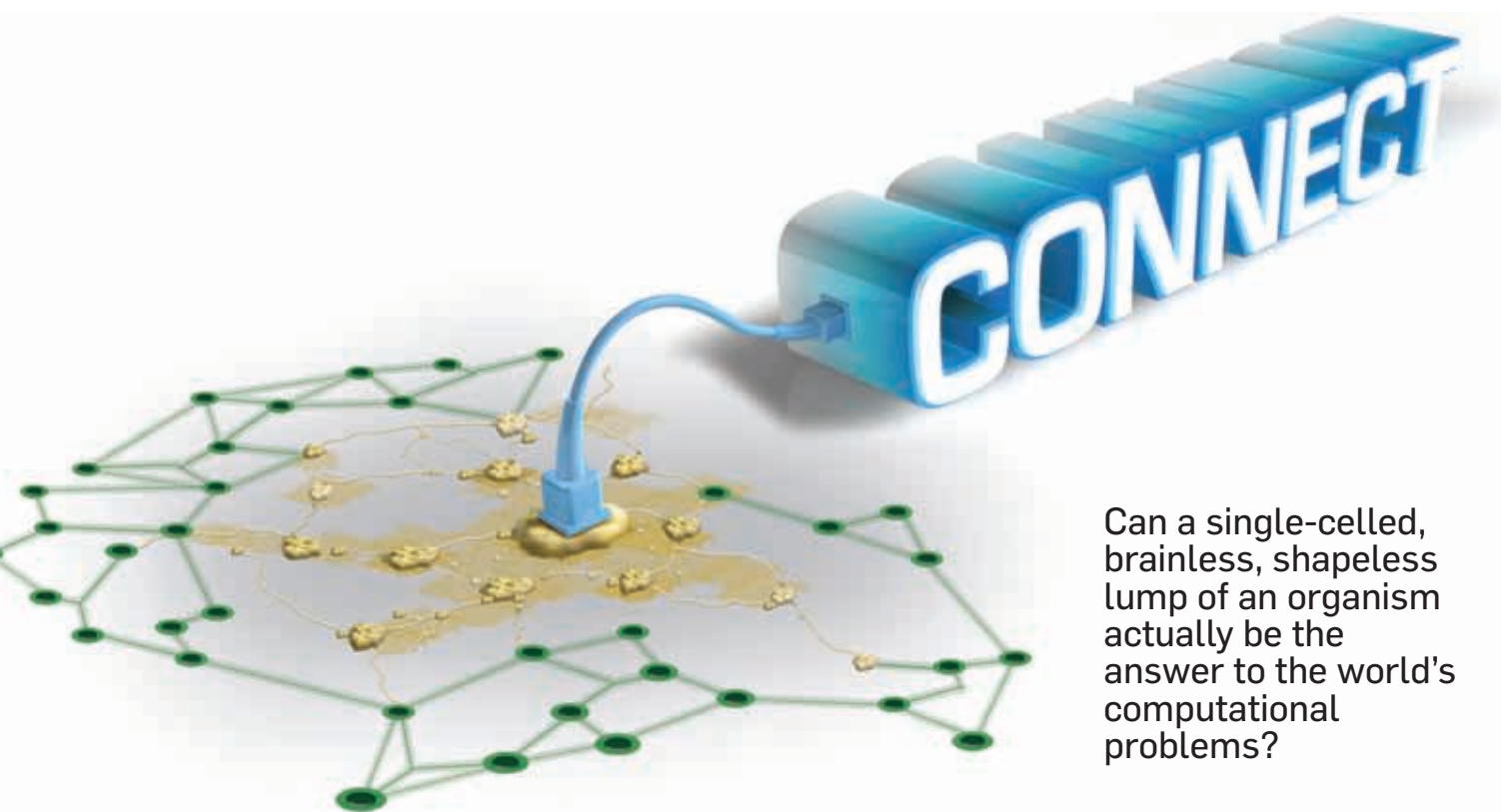
## How stuff works

A peek into the internal workings of AMD's Graphics Core Next architecture



## "Intel Inside" mobiles

Lenovo K800, a smartphone based on Intel Atom Z2460 to be up for sale in Q2 2012  
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Can a single-celled, brainless, shapeless lump of an organism actually be the answer to the world's computational problems?

# Organic Networking

Anirudh Regidi

[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

**P**hysarum polycephalum or slime mould as it's better known, is a single-celled, amoeba-like organism which prefers to feed on bacteria. What's so special about this, you ask? That will take some explaining.

## What does it do?

Slime mould starts life as a small mass of amoeba-like cells, which start multiplying when it senses its favourite food (some say they love sedatives!). When these cells encounter the right mate, they form a 'plasmodia', which is basically one large cell with nuclei floating in the cytoplasm (the life 'blood' of these organisms). The slime mould starts pulsing, similar to your heart pulsating as it pumps blood. Every time the mould expands, it feels or senses around for more food. When it

encounters food, it will start to pulse more in that direction and less in the others. This process repeats itself till the mould has enveloped all the food in its vicinity. By the end of this process, the mould can grow up to a metre or more in diameter. Think about it, a single-celled organism that is larger than a pizza!

Once this slime mould is satisfied that it has got all the food in the vicinity, all the nuclei start receding and settle down in the centre of the mould. The rest of the mould also recedes into the centre, leaving behind very thin protoplasmic strands (similar to veins), connecting all the food sources via a complex network and ensuring the most

efficient way to transport the food to the central core. If a strand is carrying a larger volume of food, it will expand, if it isn't it will contract, eventually to disappear. The cytoplasm in these 'veins' is responsible



Slime mould in nature

IMAGING: ATUL DESHMUKH



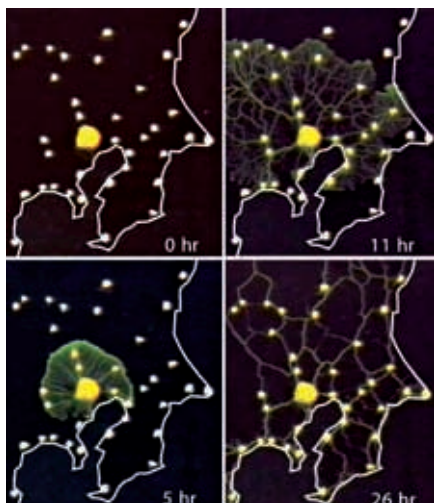
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## A look at slime mould in action

A time lapse vidoe of slime mould solving a mode.  
Check it out at  
<http://bit.ly/xCGh3w>

Tomorrow's Tech



The Tokyo Rail Network in 24 hours

for transferring the food across the network and amazingly, it can reach speeds of around 1.3 m/s. To put that in perspective, an average person walks as fast as the cytoplasm travels.

### So what's so great about that?

What scientists have discovered is that slime mould actually finds the most efficient way to transport food. A fault-tolerant network if you will. The transport system of the mould is filled with redundancies and always

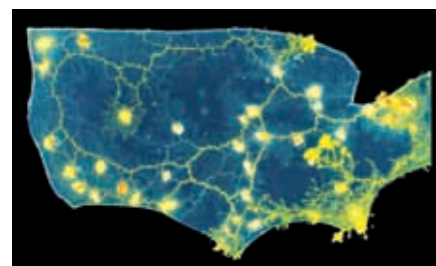
ensures that food will reach the central "hub", even if a strand (or more) is cut.

When placed in a simple maze, it was discovered that the slime mould solved it and found the shortest route to the exit, where a food source was placed. This is a small achievement and we're sure even a five year-old can do it, but what about something larger? A rail network for example, or even a complex computer networking problem? These are questions which even a super-computer balks at. The amount of data is too large and very few super-computers can even process this information fully. Even so, super-computing time is very expensive and not everyone can get their hands on it.

In a recent experiment, researchers placed a blob of slime mould in an enclosed petri dish and placed food sources (oat flakes, in this case), at strategic points around the dish. The mould was left to its own devices for about 24 hrs, after which the scientists examined the final results or network that had formed. What they discovered was startling, to say the least. The mould hadn't been placed in just any petri dish, neither was the placement of the food random. The petri dish was shaped like a map of Tokyo and the food was placed at the railway stations along the Tokyo Rail Network! What startled the researchers was that this single-celled protoplasmic lump had formed a network which coincided almost exactly with this network. This is even more amazing considering that the Tokyo Rail Network is among the most efficient and fault tolerant in the world!

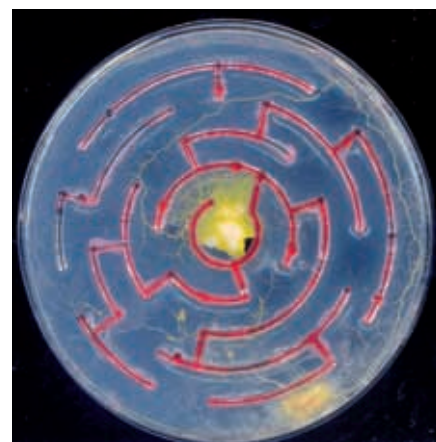
### Now what?

Slime mould has proved its mettle against the best super-computers and even humans in the world. What took engineers and computers years to do (refining the Tokyo Rail Network), the slime mould did in 24 hours. This aspect of it has astounded the



US road and power grid in Slime mould

scientists the world over, and the only conclusion they could come to is that efficient networking is one of the most abstruse and complex sciences in the world, but one that nature has mastered over millenia of evolutionary change. Biological organisms like slime mould have provided scientists with a readily scalable solution to growing networks in general. The networks so produced are

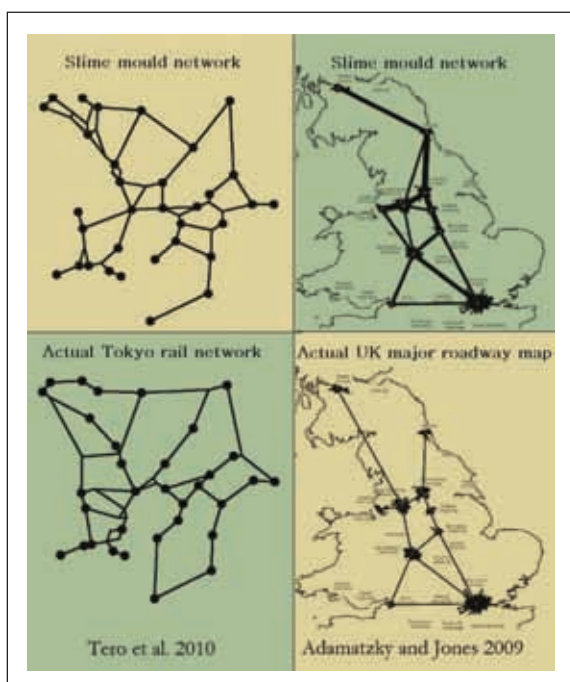


Slime maze

quite robust and fault tolerant as well. Scientists and mathematicians are also working on developing a mathematical model based on this phenomena- something they hope that can be applied to all aspects of network design, including social networking, the laying of power lines, telephone lines and much more.

Even the chipset manufacturing industry can see a revolution with this sort of technology. Imagine what it would be like, a world of slime mould farms busily pulsating away, solving mankind's most acute networking problems!

It is fascinating and in many ways, a humbling experience to see what nature has to teach us. If a single-celled, brainless lump can teach us so much, what else is there waiting to be discovered? ■



Slime mold maps

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# AMD Graphics Core Next

Everything you wanted to know about AMD's next generation GPGPU architecture

Nimish Sawant

[nimish.sawant@thinkdigit.com](mailto:nimish.sawant@thinkdigit.com)

Graphics cards these days have various functions apart from the prime responsibility of improving the frame rates and realism in a game. With a lot of tasks requiring heavy parallel processing, the processor may not always be able to keep up with certain applications, or if it does, it wouldn't have enough resources to run other programs concurrently, as smoothly. This brings us to the concept of GPU Computing, wherein a graphics card not only helps improve your system's overall graphics related performance, but also enables speeding up certain computing tasks such as say rendering, transcoding, etc.

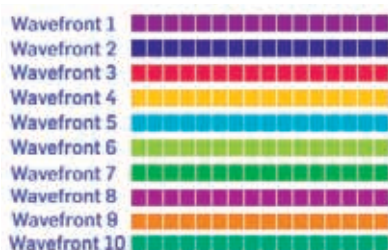
With its current generation of Radeon HD cards, AMD has introduced a new architecture called Graphics Core Next which will be seen in the HD 7900 series cards very soon.

With the HD 7000 series of cards, you have innovations such as a 28-nm manufacturing process, support for DX11.1 and support for C++. So, without further ado, let's have a look at the new architecture and try to figure out the advantages over the older gen VLIW architecture.

## SIMD Out, CU In

In the previous generation of cards, the basic building block – the Stream Processor – of the GPU was based on the Very Long Instruction Word 4 architecture. That means each

stream processor has four math units (ALU) also known as Radeon cores, which execute instructions in parallel. Sixteen such stream processors make one VLIW 4 SIMD engine. Each



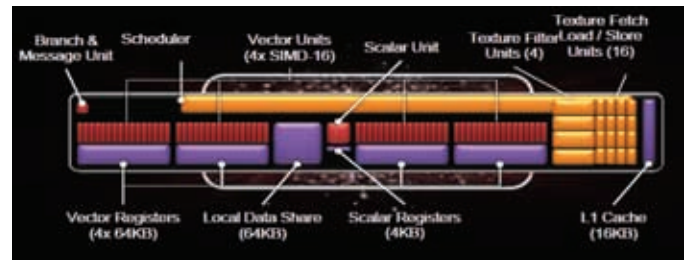
Wavefront queue

SIMD engine has 64 ALUs. This architecture is great for executing multiple operations from a similar task by breaking it up into small segments called Wavefronts. The compiler which does all the scheduling is optimised for graphic-intensive tasks involving mapping dot product math. In a game for instance, the compiler does the scheduling well in advance and it's static, that is it can't be changed on the fly.

In some scalar instructions seen in more general purpose applications, one wave front can't execute until another wavefront has been resolved. In such circumstances, the VLIW architecture seems lacking as the compiler can't change the wavefront queue as it has already been scheduled. This issue is known as a dependency which is common with general purpose compute related tasks.

In the diagram below, you have the wavefronts going from 1 to 10, with wavefronts 3, 6 and 7 having dependencies. With the VLIW4 architecture it will take four clock cycles to resolve all the wavefronts.

This issue is resolved with the help of a Compute Unit (CU), which is at the

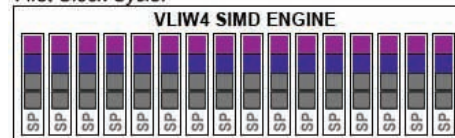


The Compute Unit

heart of the Graphics Core Next. Just like a VLIW4 SIMD engine, the Compute Unit also has 64 ALUs, but they're grouped into four Vector Units – each having 16 ALUs. In a VLIW4 SIMD engine all the 16 stream processors were scheduled simultaneously by a compiler, but in the compute unit, each of the four vector units can be scheduled individually. There is a dedicated hardware scheduler – Branch Unit and MSG.

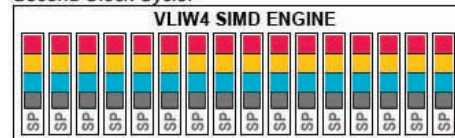
The immediate advantage is it takes care of dependencies. As seen on the next page, the 10 wavefronts are resolved in lesser time, as the hardware scheduler schedules

First Clock Cycle:



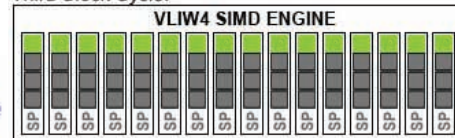
Third and fourth ALUs are unused while dependency is resolved

Second Clock Cycle:



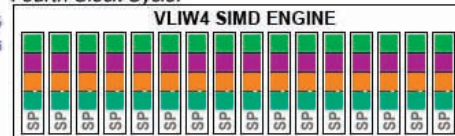
Fourth ALUs are unused while dependency is resolved

Third Clock Cycle:



Second, third, and fourth ALUs are unused while dependency is resolved

Fourth Clock Cycle:



All ALUs are active in this clock cycle, no dependencies

Dependency handling in VLIW4

Contd. on Pg. 42 ▶



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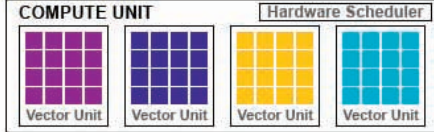
## NVIDIA tech in automobiles

NVIDIA Tegra 3 platform will power in-car digital systems in Audi A7, Tesla Model S and Lamborghini Aventador

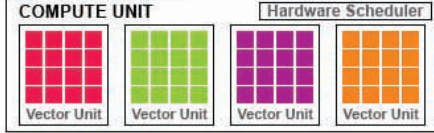
## Transformer ICS update

According to ASUS North America's reply to a user query, the Ice Cream Sandwich update will arrive on the ASUS Transformer tablet by mid-February

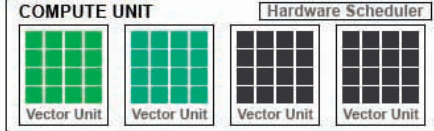
### First Clock Cycle:



### Second Clock Cycle:



### Third Clock Cycle:



### Dependency handling in CU

dependent wavefronts in the next clock cycle. This ensures that unlike VLIW 4 setup, none of the ALUs go unused.

The vector units are just one part of the compute unit. The CU also has the Scalar Unit which handles the pointer arithmetic and branching code, leaving the vector unit to just concentrate on the wavefronts that are pixel heavy. A scalar unit handles simple integer operations, if/else conditional branches, etc., saving up on the vector unit time. So each unit is optimised to perform tasks that it's best at. There are four Texture filter units on each CU block.

Four compute units share an L1 cache which comprises a 16KB Instruction cache and 32KB Scalar data cache. This ensures smooth communication between multiple compute units. So if a thread in CU1 requires some data and is dependent on another thread in CU2 or CU3 for instance, then that data can be shared over the L1 cache.

## The new GPU

Compute unit, even though it's a minor processor in itself, is just a building block of the whole GPU. Looking at the overall diagram of the GPU alongside, you'll come across blocks such as an Asynchronous Compute Engine Command processor, Graphics command processor, Primitive Pipe, Pixel pipes and Raster Operators.

Asynchronous Compute Engine's (ACE) main aim is to accept work and then distribute it to the compute units for further processing. There can be multiple ACEs within a GPU and they have the ability to pri-

oritise or reprioritise tasks based on dependencies so that they're completed in a different order than what they were received in.

For graphics, there is the Graphics Command Processor, below which you have the multiple Primitive Pipes. The pipes contain the geometry assembler, Gen 9 Tessellator and Vertex assembler. The tessellation units feature off-chip buffering. This means that the geometry data from tessellated workloads can be stored in the DRAM only if the on-chip cache becomes full.

Once the compute units are done with the compute and graphical workload received from the ACE and GCP, the output is then sent to the Pixel pipelines. These contain the Raster operators which write the pixel on the output buffer i.e. the L2 cache of the GPU.

## Memory and cache

Each compute unit has its own L1 cache that is divided into data, instruction and load/store. The GPU, on the other hand, has L2 cache which is fully coherent, maintaining data consistency. There is a 64-bit interface between L1 and L2 cache and with scaling

in the number of compute units, there will be an increased bandwidth between these caches. Moreover, the L1 cache is read/write which makes the CU even more optimised for future workloads.

Also this architecture supports virtualisation of memory with the CPU. In previous generation cards, if the data set was too large to be accommodated on the onboard cache or VRAM, then there had to be a provision for separate memory virtualisation system, from the CPU's virtual memory.

But with x86-64 virtual memory support, the GPU can share the CPU's virtual memory thus improving data handling. So things like Megatextures – which are single large texture spaces for static terrains – currently loaded from the system hard drive (as they can't be accommodated in the graphics cards VRAM), can be stored in the virtual memory with Graphics Core Next, which ensures quicker load times.

So that's about the new architecture which will be seen in Radeon HD 79xx series of cards only. Refer to the block diagram below. ■



The new architecture



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# Configuration files deleted, data recovery, incomplete setup...

Get solutions to all your technical queries here

## Partition woes

I had installed openSUSE 12.1, which I was using along with Windows 7 but now I want to remove that. So I formatted its partition using Windows. On rebooting my system it didn't start. It wasn't booting so I have to install it again (openSUSE). Please tell me how to uninstall it.

Rishab Shukla

This is one of the most common problems one faces after formatting a Linux partition. The bootloader, which in your case is GRUB, still resides in the MBR, but all the configuration files were deleted when you formatted the Linux partition.

Make sure you have a Windows 7 System Repair Disc or Windows 7 Installation Disc handy before startup. To get rid of OpenSUSE, format the OpenSUSE partition (again) from inside Windows. Next, pop in the Windows 7 disc into the drive and select "Repair your computer" when prompted to do so. In the system recovery dialog that follows, select "Command Prompt". Inside command prompt type in the following commands `Bootrec.exe /FixBoot` and `Bootrec.exe /FixMBR`. Now exit the prompt and hit Restart. You should now be able to boot into Windows.

## Graphic card for my mobo

My motherboard, Gigabyte GA-MA-785GM-US2H is based on AMD 785G Chipset & AMD Athlon X2 7850 Black Edition processor.

The board is ATI Hybrid Crossfire certified with onboard ATI Radeon HD 4200 512 MB. I want a discreet graphic card for my board to enhance my experience of HD movies and casual gaming.

Now since AMD claims that for this chipset I can only have an ATI Radeon graphic card which is ATI Hybrid crossfire certified, the only model that fits this crite-

ria is ATI Radeon HD 3450. This model is not currently available in the market (Lamington Road) as it has become older.

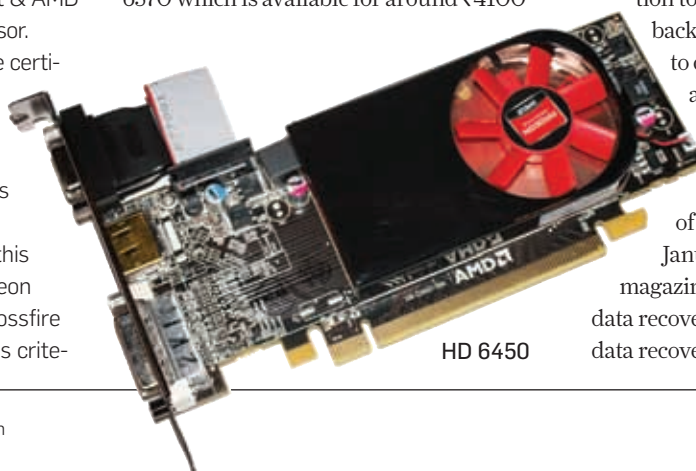
The other model now available is ATI Radeon HD 5450 for ₹2150.

I want to know whether it will support ATI Hybrid Crossfire with my motherboard.

I don't play games much. Currently I have *NFS Most Wanted* and *Burnout Paradise*. They felt slow with my onboard graphics so I stopped playing them. I want to play other NFS games or similar racing games later if 5450 can support them well, although I want it primarily for viewing HD movies. So is it sufficient for these tasks? You can recommend other Radeon models also.

Abhishek Bhikale

If you want to just play HD movies and game at moderate resolutions (say 1280x1024 and lower) then the HD 5450 is a decent card - better still is the HD 6450 (around ₹2800). However, if you plan to play future games which may require more power from your card you can go for HD 6570 which is available for around ₹4100



HD 6450

## Ubuntu lost my data

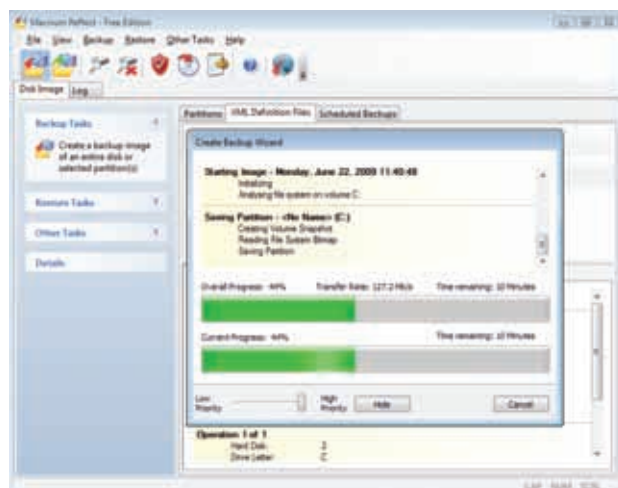
I had a problem while installing Ubuntu on my laptop with Windows 7 Home Basic OS (licensed version) using a CD.

It didn't ask for the partition drive. I heard that it would result in loss of the data and requires formatting.

Can you please suggest if there's any way to completely recover the lost data?

Any software which is freeware or open source, which does the job?

Sunil S



Macrium Reflect

Ubuntu has an option which installs it along side an existing operating system. It will create a new partition on your hard drive and install itself there, without disturbing the contents of the other operating system. On running the setup, you'll reach the installation type dialog, select 'Install Ubuntu alongside Windows 7'. Then select the size you want to allocate to the Ubuntu partition and you're good to go. You can even select a custom file system layout for your system.

In case you still don't trust the installation to work properly you can use a free backup utility called Macrium Reflect to create an image of your drive and save it on an external hard disk. You can use this image to restore the data you lose.

We have packed in a host of data recovery software in the January 2012 Alpha DVD. The magazine too carries Tips and Tricks on data recovery, which discusses how to use data recovery tools.



## 500 million angry players

Angry Birds bags 500 million downloads and \$100 million in revenues for 2011 <http://bit.ly/z9IEIV>

## What's next for PayPal

CEO John Donahoe talks about what's next for eBay's PayPal <http://dthin.gs/y4Qhun>

Q&A

### Removing the installer

In my PC, a Windows XP Service Pack 3 installer has been downloaded and installed by a friend. Now whenever I start my PC, while booting up, two options come to the screen: "Windows XP Professional" and "Windows XP SP3 setup". The problem is that I don't have an SP3 cd with me and this prompt comes up whenever I start my system. I searched my whole computer to uninstall the SP3 installer but couldn't find it. Kindly suggest a method for removing this installer so that the "Windows XP SP3 setup" doesn't come up while booting. Please help, because I know that only Digit team can help me.

Subroto Goswami

It seems your friend stopped the Windows XP SP3 installation before letting it finish. To remove the errant "Windows XP SP3 Setup" entry from the bootloader, first boot into Windows XP Professional and go through the following steps:

1. Open "My Computer"
  2. Under the Tools menu, select "Folder Options". In the dialog that follows select the "View" tab, under that select "Show Hidden Files and Folders" and uncheck both "Hide protected operating system file (Recommended)" and "Hide extensions for known file types"
  3. Go to the root folder which should be either C:\ or D:\
  4. Open "boot.ini" in Notepad. It should look something like this
- ```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)
partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)parti-
```

```
tion(1)\WINDOWS="Windows XP
Professional" /fastdetect
multi(0)disk(0)rdisk(0)parti-
tion(2)\WINNT="Windows XP SP3
Setup" /fastdetect
```

5. Delete the line saying "Windows XP SP3 Setup"
6. Make sure the "default" entry is same as the part before "=" in the line saying "Windows XP Professional"
7. Save, exit and reboot the system. You will now directly boot into Windows XP Professional

### A failing hard drive?

I have a Dell Inspiron 15r with the following configuration:

**Processor:** Intel(R) Core(TM) i3-2310M CPU @ 2.10 GHz

**RAM:** 3 GB

**OS:** Windows 7 Home Basic Service pack 1 x64 bit

My problem is that whenever I play games on lan (CS and NFS MW) the undergiven problem occurs and my computer restarts itself. I've tried contacting my Dell operators but got no help. Please help me as I can't play and I'm going mad about this problem. Problem signature:

**Problem Event Name:** BlueScreen

**OS Version:** 6.1.7601.2.1.0.768.2

**Locale ID:** 1033

Additional information about the problem:

BCCode: d1

BCP1: 00000000000000004

BCP2: 00000000000000002

BCP3: 00000000000000000

BCP4: FFFFFF80059025BC

**OS Version:** 6\_1\_7601

**Service Pack:** 1\_0

**Product:** 768\_1

Files that help describe the problem:

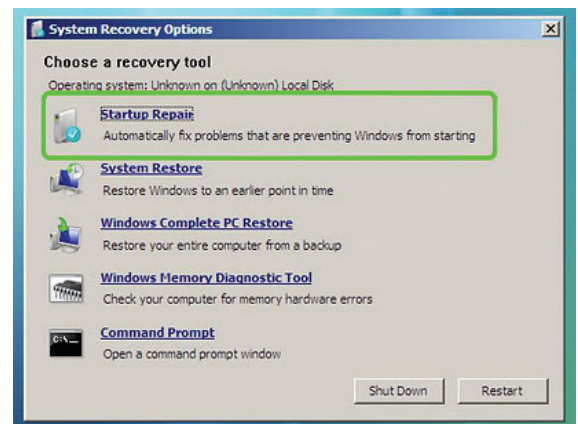
C:\Windows\

Minidump\121211-16489-01.dmp

C:\Users\Personal\AppData\Local\Temp\WER-46566-0.sysdata.xml

Sunam Taran

The error you've got corresponds to 0x000000D1: DRIVER\_IRQL\_NOT\_LESS\_OR\_EQUAL which is caused due to bad device drivers. Some driver has tried to access an address that is pageable or



Vista Recovery

completely invalid. You might also want to back up your important data, as this may also be a precursor to a failing hard drive. You can download the utility to test the hard drives from the drive manufacturer's web site.

Update the graphics drivers and see if you're able to resolve the issue.

You should also run Microsoft memory diagnostic to check your RAM.

If you have a restore point, then do a System Restore to the point before this issue started bothering you. ■



# Ching's Secret

Instant, Hakka & Pad Thai Noodles,  
Soups, Sauces & Miracle Masala

## Ching's Khao, Baki Bhool Jao



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## FileSonic disables file sharing

In wake of the recent crackdown on Megaupload, FileSonic has disabled its file sharing service  
<http://bit.ly/y20koh>

## Google+ hits 90 million users

Google's recent sign-up spree has helped the social network achieve 90 million users.  
<http://bit.ly/yp21qv>

# Voice Modulator

## Tenor to baritone with the flick of a switch

Mithun Mohandas  
[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

Ever fancied playing pranks on your unsuspecting friends? Of course you did, and this DIY here is one you should have in your arsenal of tricks.

Stuff that can be accomplished using this.

- Phone pranks by changing your own voice (Don't do anything illegal!)
- Use it as an inline audio modulator on your friend's sound system. (You are responsible if you blow his system)
- Make a creepy recording in an alien voice and send the tabloids in a frenzy. (Remember the aliens drinking cow's milk story on a news channel?)
- Wear a scary costume and modulate your voice.
- Start a singing career!
- ... and so much more.

What we'll be building this month is a Voice modulator and the table alongside lists what all you will need to make that happen.

## Construction

The construction of the circuit is fairly simple and we've even included one CAD

drawing if you want to etch your own circuit (<http://bit.ly/Ab1rfG>). The circuit uses a Dual Op-amp (LM358) and an amplifier TDA7052 to get the job done. One amp of LM358 acts as a preamplifier for the microphone, while the other amp acts as a Wein bridge oscillator. In layman's terms, one half increases the signal strength of the mic and the other modifies the signal. The other IC TDA7052 is an audio amplifier which will drive the 8  $\Omega$  (Ohm) speaker. You may connect the speaker, mic and a voltage source in serial to see if your voice is picked up by the mic and audible via the speaker. Most probably, it won't. That's why the amplifier is needed.

You can modify the circuit according to your needs. Changing the op-amp will provide for different sound signatures. The resistance of the two trimmers (R3 & R9) can be varied to produce different sound signatures also since it modifies the frequency of the Wein bridge. If you notice too much noise emanating from the speaker then swap mics or insert an audio jack at the mic's location. This way you can modify a song's playback.

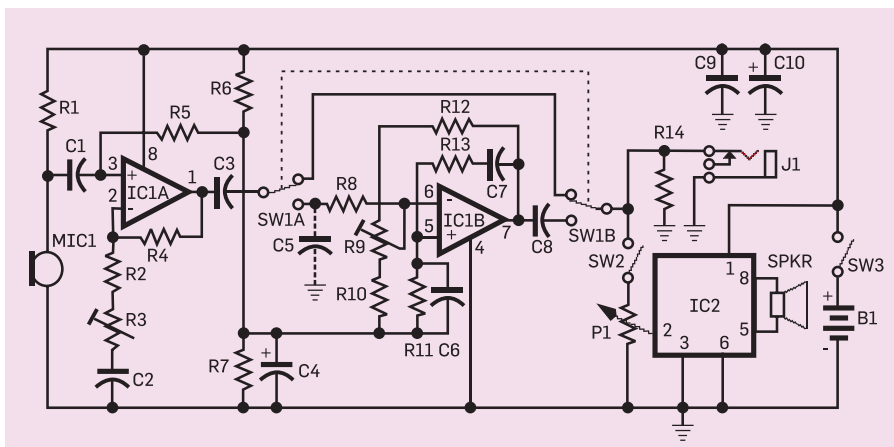
The switch SW1 provides for a way to bypass the voice modulation part of the circuit, so you can provide a clean signal as and

when required. So with a flick of this switch the voice changes altogether.

You may replace the microphones with an audio jack which will enable you to use better microphones and get a cleaner audio signal. Ensure that the capacitor

## Component list

| Parts              | Value               | Particulars            |
|--------------------|---------------------|------------------------|
| P1                 | 10 K $\Omega$       | Log Potentiometer      |
| R1, R10            | 10 K $\Omega$ 1/4W  | Resistor               |
| R2                 | 1 K $\Omega$ 1/4W   | Resistor               |
| R3                 | 50 K $\Omega$ 1/2W  | Trimmer                |
| R4, R6, R7, R14    | 100 K $\Omega$ 1/4W | Resistor               |
| R5                 | 47 K $\Omega$ 1/4W  | Resistor               |
| R8                 | 68 K $\Omega$ 1/4W  | Resistor               |
| R9                 | 2.2 K $\Omega$ 1/2W | Trimmer                |
| R11                | 33 K $\Omega$ 1/4W  | Resistor               |
| R12                | 18 K $\Omega$ 1/4W  | Resistor               |
| R13                | 15 K $\Omega$ 1/4W  | Resistor               |
| C1, C2, C3, C8, C9 | 100 nF/63 V         | Polyester Capacitor    |
| C4                 | 10 $\mu$ F/25 V     | Electrolytic Capacitor |
| C5                 | 220 nF/63 V         | Polyester Capacitor    |
| C6                 | 4.7 nF/63 V         | Polyester Capacitor    |
| C7                 | 10 nF/63 V          | Polyester Capacitor    |
| C10                | 220 $\mu$ F/25 V    | Electrolytic Capacitor |
| IC1                | LM358               | Low Power Dual Op-amp  |
| IC2                | TDA7052             | Audio power amplifier  |
| MIC1               |                     | Electret Condensor mic |
| SPKR               | 8 $\Omega$          | Loudspeaker            |
| SW1                | DPDT                | Toggle switch          |
| SW2, SW3           | SPST                | Toggle switch          |
| J1                 | 3.5mm               | Mono audio jack        |
| B1                 | 9V                  | DC battery             |



Circuit Diagram

leads are short and have a snug fit to reduce unwanted noise from creeping into the signal due to inductance. The same applies for all components when an audio circuit is to be assembled. So ensure all your components are of good quality or you'll be forced to bear with a persistent buzzing sound. Stick to polymer capacitors as they have a lower ESR than electrolytic capacitors. Condenser microphones cannot be helped so bypassing that with an audio jack is your only option. Also, potentiometers tend to be of poor quality and have a high tolerance, so you may require a shunt or series resistor to bring the value to 10K.





**digit**



**START DATE OF THE CONTEST**

**3<sup>rd</sup> OF JANUARY, 2012**

**END DATE OF THE CONTEST**

**29<sup>th</sup> OF FEBRUARY, 2012**

**PUBLISH 3 APPS & GET A GUARANTEED  
WINDOWS MOBILE PHONE**

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Every participant who **submits 6 valid apps** would also be given a **six-month subscription to Digit** worth **Rs. 1000/-**



Every participant who **submits 6 valid apps** also stands a chance to win an exciting **Windows Phone accessory**



The participant who **submits the maximum number of apps** in the month of Jan-Feb also stands a chance to get featured in the **April Issue of Digit Magazine** and at **www.thinkdigit.com**



Sign Up Fee will be **reimbursed in the form of Rs. 5,000** worth of gift vouchers to all successful participants who **submit 3 valid Apps** within the contest period

### YOUR WINDOWS MOBILE IN 6 SIMPLE STEPS

- 1) Register for the contest <http://bit.ly/AppDigit>
- 2) Follow the instructions and register on AppHub
- 3) Download Windows Phone SDKs and other tools
- 4) Build 3 Windows Phone Applications
- 5) Get the Apps certified and submit them on the Windows Phone Marketplace
- 6) Notify Digit by sending a mail to [app@thinkdigit.com](mailto:app@thinkdigit.com) with details of the Windows App – App Names and URLs that you submitted as part of this contest.

<http://bit.ly/AppDigit>



## Gaseous ring around young star

The discovery of a constrained ring of carbon monoxide around a new star has astronomers excited.  
<http://bit.ly/zzZ4WQ>

## Ankle - best place to scratch

A recent study has found that scratching at one's ankle is the most pleasurable of all places to scratch.  
<http://tgr.ph/wAecVb>

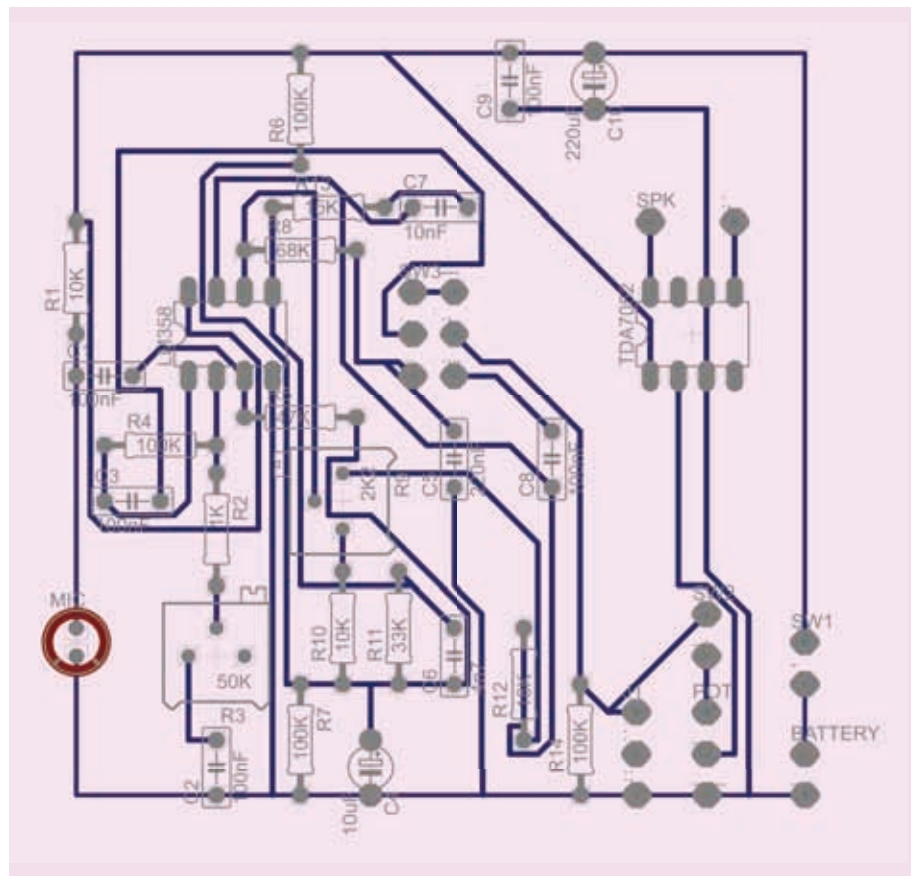
## Operation

Plug in a microphone and a speaker. Switch on SW1, SW2 and SW3 and start speaking into the microphone. Vary the trimmers R3 and R9 to get the desired modulation of the voice and then vary the potentiometer P1 to increase the volume of the output. Here's what the switches do :

- SW1 - Bypasses the modulation of the sound.
- SW2 - Switches on the speaker.
- SW3 - Switches the power on/off.

Alternatives to the LM358 may be used, however the values of R11, R13, C6 and C7 need to be altered accordingly as they all together form the wein bridge. Currently the wein bridge is centred at 1 KHz. Certain alternatives like the MIC863, LT1112 and TC1029 can be used without changing the passive components. They're all pretty much the same.

If you prefer an awesome robotic voice, kind of like *James Earl Jones* doing Darth Vader from *Star Wars*, then check out ICs HT8950/WIN8072/RTS0072/PT2361. They all have four parameters that can be varied to provide a wide variety of audio signal output. With some tinkering you can generate the sounds of all



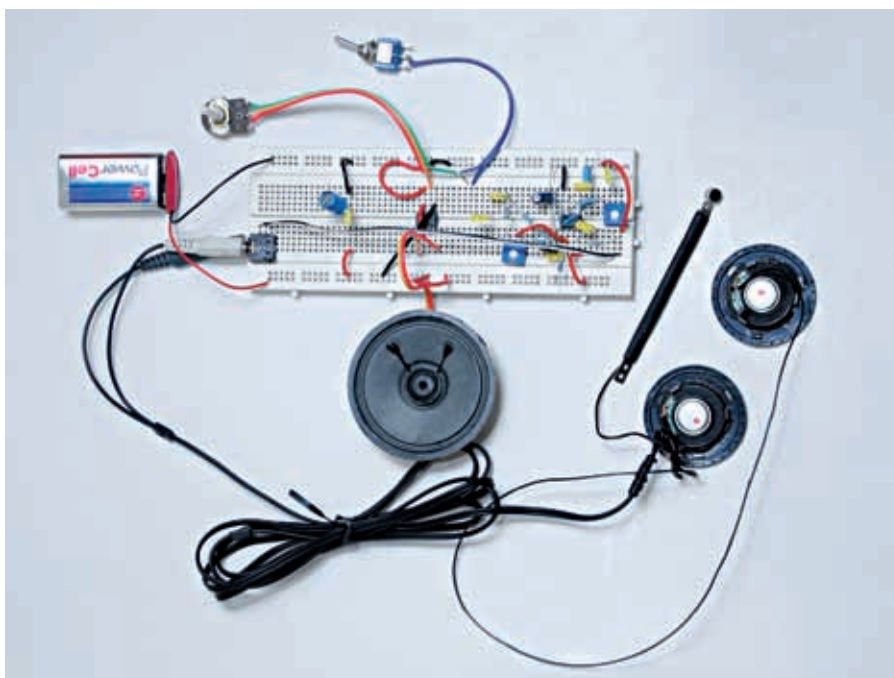
CAD diagram of the circuit

your favourite mechanical characters. However, they are not available in

India but in case you do find any, let us know. The same can be purchased on [www.ebay.com](http://www.ebay.com) but very few sellers would be willing to ship to India. Even if they did, the IC would cost about ₹200 each for low quantities. Some of these are no longer in production.

This is only a general circuit to get the job done, we hope that you'll tinker around with the design further and come up with something wacky. Do let us know about your crazy modifications. ■

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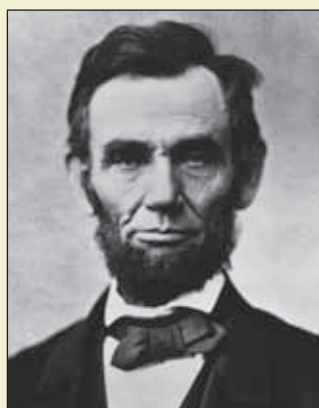
Breadboard prototype



# DIGITAL PHOTOGRAPHY

One of the most important things when it comes to digital photography of any sort is knowing and understanding your camera. Spend some time experimenting with the settings. Learn what each button does. It will put you in good stead when you need to quickly take a difficult shot and there's not much time to set up your camera.

For example, the fact that mobile cameras have fixed focus need not be looked at as a limitation. You can just as easily exploit this feature to create good portraits with an out-of-focus background! In fact, portraits were what phone



Taking portrait shots

cameras were designed to take in the first place. Who says you need an SLR and a fancy lens? The tips that follow will help you better take advantage of the features and settings of your camera.

## Utilising grey cards

A camera's exposure meter calculates exposure and white balance (WB) using a shade of 18 per cent grey, or neutral grey as it's better known, as reference. Basically, if you expose a dark surface, the meter tries to make it 18 per cent grey by overexposing the image and vice-versa for brighter surfaces. The same goes for white balance, the camera tries to make

the exposed area a shade of grey and sets the colour temperature accordingly.

This is where grey cards come into the picture, literally. Have someone expose the grey card in the scene you want to shoot, using spot or centre-weighted metering, and the camera should give you the best possible exposure that it can in those circumstances. In fact, if you shoot a lot of images at that location, as long as you have one photo with a grey card as reference, you can batch process the other images using the first one as a reference.

For batch processing, depending on the software you



The same shot taken with and without a grey card

use, select the neutral colour picker and select the grey card from your reference image.

card if you want to. Simply open up a new file in Photoshop or Gimp, fill it with 18 per cent grey and you're done. Print this. You can also chop out the image of the grey card we've printed over-leaf. Now this isn't 100 per cent accurate as the output is subject to the capabilities of the printer, but should be sufficient for most needs.

A simpler, and maybe more handy alternative, is to use your hand as reference. Take a shot of the back of your hand, one each under direct sunlight and in the shade. Compare the exposure to that taken with a grey card. You'll usually find that the

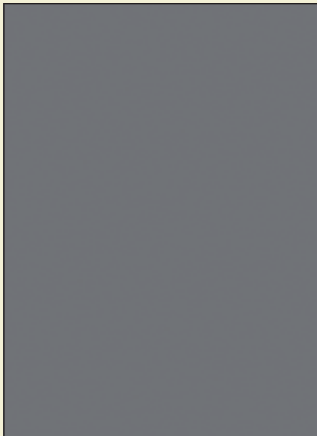


Manually adjusted white balance can give better results



|                                      |    |
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| Git for all.....                     | 13 |
| File management and cataloguing..... | 15 |

*Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.*



A sample grey card

exposure is about one stop off. Compensate accordingly when you take photos and you're set! Works with brown paper bags as well. Of course, metering off any object that you believe is closest to 18 per cent grey can also work.

## Playing with white balance

As mentioned earlier, adjusting white balance is a breeze when you use a grey card. However, there are many ways by which you can tweak the settings to get the colours or effects you'd want. Do you want to make day look like night? Just set your white balance to tungsten or incandescent, set exposure compensation at -2ev and voila! Day is now night! Of course, you might still need to tweak the image a bit.

Here's a small cheat sheet to make things easier...

- **Tungsten / Incandescent:** Extremely blue, except indoors with no natural light source
- **Daylight:** Close to normal but with a mild bluish cast
- **Shady:** Warmer than daylight with no bluish cast



Auto white balance cannot always expose the scene correctly

- **Fluorescent:** Corrects the green tinge under fluorescent light, especially white artificial light such as that from tubelights or CFLs
- Custom white balance settings can be found on almost all cameras, including certain mobile phone cameras. A simple trick to adjust the value is to follow the Kelvin scale of temperature. Think of a fire, the hotter it is, the bluer it gets (upto a certain point). Custom WB works in the same way, the higher the value, the bluer the image, so the lower the amount of light, the higher the kelvin value that you need to set.

## Shooting fireworks and lightning

Fireworks and lightning have long been the bane of amateur

photographers all over the world. Getting the shot just right is difficult and there are so many things such as exposure, aperture and shutter speed to juggle. What's the ideal setting? There's no such thing.

A very simple way of getting great shots of lightning and/or fireworks is to first point your camera at a spot where you think that rocket will burst or hope that lightning will strike. Set a long exposure manually for, say, 30 seconds. Set the aperture to a value of around f/8 or f/11. Now, release the shutter. Keep your hand over the lens while the shutter is open and only remove it when you think the rocket or whatever will explode in front of the lens! It's as simple as that. The same goes for lightning except that it's best



Shot taken in the afternoon at auto settings



Shot taken at the afternoon with incandescent white balance



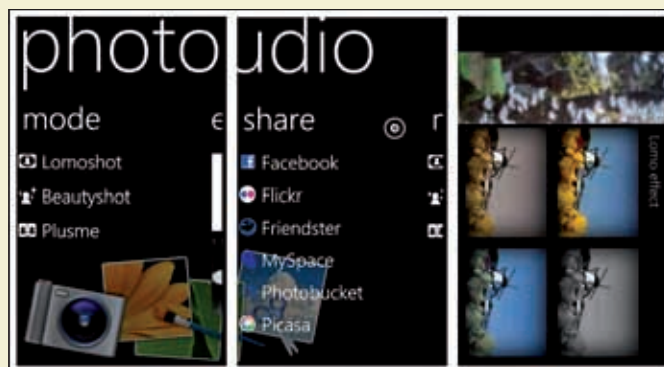
This shot can be very hard to get if you don't know how



to first expose the shot and cover the lens only after the lightning strikes. This is mainly because it happens so fast that you may not have time to respond, and also, lightning strikes are so bright that you'll get most of the scene in that flash anyway. This method requires plenty of trial and error, but that's what digital cameras are best at, reviewing and discarding unwanted images at no cost!

## Making use of apps

Mobile phones and similar mobile devices are quite badly crippled when it comes to image quality. Such devices, however, have lots of creative potential. The apps alone add a whole new dimension to your device



Samsung PhotoStudio

convenient if you want to keep important documents such as your driving license and passport handy at all times. All of these items can be neatly sorted and indexed by this app.

Samsung's "PhotoStudio" is another interesting app. Avail-

## Unleashing your creativity

One of the biggest advantages of a mobile phone camera is that it's always with you. Also, mobile phones are usually quite rugged as they're designed to withstand the daily abuse we



Handyscan

and can completely change the way you work with a mobile phone camera.

Take "Handyscan" for instance. This app is available for iOS, Android and WP7. A very simple app, it allows you to take images and convert them to a .pdf format. The paid version even works as an OCR software, allowing you to actually extract the text and save it. How is this useful? You can save everything from restaurant menus, bills and receipts to addresses, quotations and newspaper articles, etc., for quick reference. Also



Helmet mounted cams need not be so complicated

able on Samsung's own Android and Mango devices, this is an app you can have a lot of fun with. Other than allowing you to directly share images on Photobucket and Picasa web albums, this app comes with a host of editing tools and some very interesting scene modes, including a panorama mode which actually works. "Dreamshot" is an interesting mode which allows you to insert an image in a fixed template, so, you can have your friend's face on the cover of a newspaper, for example.

subject them to. You can use this to your advantage when experimenting with such devices.

For the bespectacled among you there's a very simple solution in case you misplace your spectacles. Grab your phone, turn on the camera, hold it in front of you at a distance at which you can see the screen clearly and there you have it, a little window of clarity in that foggy world you call your vision!

A mobile phone can be converted into an effective little spy camera as well. For this, you

can use an old camera phone if you have one rotting in some old cupboard. Rip the body apart, leaving just the essentials intact. Design your own custom housing and use software such as SmartCam to wirelessly stream to a PC directly. Attach a string and flashlight to it and you can send your phone where no phone has gone before, down shafts, inside the engine compartment of your car, anywhere you like. For a really wild ride, you can throw it into washing machine, after placing it in a waterproof plastic bag of course. You can even stick the camera under the wheel arches of your car or bike or even on your helmet. The possibilities are endless.

It's even possible to hack your old phone and convert it into a reversing camera for a car. Use the same process as above. Rip apart the camera, leave the essentials, use SmartCam or something similar and turn on your phone and camera. You should now be able to wirelessly stream video to a mobile phone or laptop in your car.

## WINDOWS PHONE 7

Microsoft, and even Nokia for that matter, have been pushing Windows Phone as the next big thing. The platform is still quite new and some of you may have trouble switching. For those of you who have taken the plunge and got yourself a spanking new WP7 device, here are some tips and tricks to get you started.

## Managing contacts

Transferring contacts from your old device to a Windows Phone can be a slow and painstaking process, or a hassle free, 2 minute job.

WP7 uses "cloud storage" for handling contacts, much like Android. It doesn't interface with your PC and neither



All your contacts are stored in the people hub

does the Zune software support the handling of contacts. If all your contacts are online, Facebook, Gmail, SkyDrive, etc., you will have absolutely no issues. The same goes for Android devices as your Android device can directly sync with Gmail anyway.

To transfer contacts to your WP7 device, you need to start it up, connect to the Internet via Wi-Fi or EDGE or 3G or whatever method you choose, setup a live account or email account and you're done. When you setup Facebook and twitter also, your contacts will be synced. All the information which is public, including images, addresses, phone numbers, etc. will automatically be pulled to your phone. Alternatively, if you have a SIM card and not too many contacts, your contacts can be synced to the SIM and then transferred to your WP7 device. This is the easy way.

If you have a phone that is not an Android device or doesn't sync to Gmail or an email id, you're in for a lot of trouble. Your goal should be to transfer your contacts and calendar, etc. to an online service such as Gmail or SkyDrive. No matter what phone you are using, if there is a software suite available such as kies, or Ovi (now Nokia suite) among others, you

will first need to export your contacts as a CSV file. Each software suite will have a different way of managing this and you will need to go through their help section and figure out how to do it. You will usually have an "Export to CSV" option in the file menu of whatever software you use.

This CSV file can now be imported directly into Gmail. To do this login to Gmail->Contacts->Import contacts->Choose file. Select the CSV file you have exported and Gmail will read it and store all the data. Now it is just a matter of syncing your gmail account to your phone again. It is a good idea

to open the CSV file you export and go through it for errors before uploading. Sometimes your numbers may be stored as +91-XXXXXXXXXX. This is a problem as most spreadsheet programs will interpret this as a number and convert +91XXXXXXXXXX to 9.1E11 or something similar. You will need to manually remove the "+" symbol to avoid errors. Also, if some of the numbers in your end up under a column other than "Home" or "Mobile", you will need to manually transfer them to avoid any problems while syncing to the phone.

For Nokia users, there is a simpler method. Head over to <http://bit.ly/xVyr5B> and follow the

## Customizing your phone

Changing your ring tone on a WP7 device is a bit more complicated than on other phones. You will have some bundled ring-tones, but to add your own you will have to do the following.

The file size of the ringtone cannot exceed 1MB and the duration of the tone cannot exceed 40 seconds. You will have to edit the song accordingly. There is no chance that a song like "Shine on you crazy diamond" can be set as a ringtone. After editing the song, you will need to set the genre as "ringtone", this is essential as otherwise the file will not show up as a ringtone and

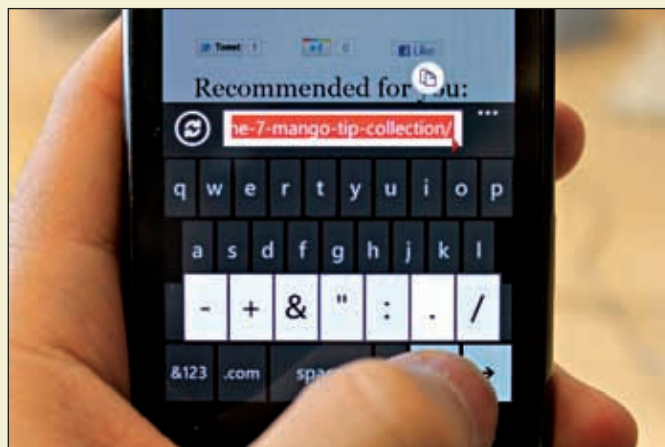


A preview of WizTiles in action

instructions depending on what model you have. Nokia also has an app to help you transfer contacts between a normal Nokia phone and a Nokia WP7 device.

will only be recognised as a song. Import the file into your Zune desktop software, sync it to your phone and you're all set. The ringtone will show up as a custom ring tone on your phone. Tap to set.

Changing the theme on a WP7 device is limited to changing the colours of all the tiles together. To add more "spice" to your phone, you can pin images and music as tiles. You can also use an app such as WizTiles to help you customize the tiles. Certain shortcuts which you use regularly can be a bit irritating to access, say for example, Wi-Fi or Cellular Data. To get around this, simply download an app called



Long-pressing a key on the keyboard



“Toggle”. It features a whole pile of tiles that you can pin to the start screen for quick access.

## Miscellaneous Tips

The US version of WP7 features an app called Local Scout. It is useful if you're the type who goes around looking for restaurants and other interesting places. The app isn't available in India but to enable it, all you have to do is navigate to settings->"region+language"; scroll down to "Browser and search language settings" and change the language to "English (United States)". The app should now show up on your start screen.

If you don't have Wi-Fi access or a data connection and for some reason you still want to connect your phone to the Internet, you can plug your phone into the PC and start the Zune software. Your phone can now access the Internet if your PC can. Bear in mind that you cannot access the marketplace or images or music or video when connected to the PC.

Long-pressing certain keys while typing will give you more options. For example, long pressing the period key will present you with options such as an exclamation mark or question mark. If you made a mistake while typing, just tapping on the word will select the whole thing and you can delete and rewrite, if you want to edit only a letter or so from the word, long-press in the input bar and you will be presented with a large cursor which you can place anywhere for easy editing.

WP7 comes with a very effective qr code reader in terms of the Bing! Visual Search app. There is a drawback to this however as you cannot read codes if you're not connected to the Internet. To get around this limitation, use a 3rd party app such as red laser for all your scanning needs.

## GIT FOR ALL

Git is usually what you call your good-for-nothing neighbour, but the programmers identify it as one of the best revision control system available. One of its central feature is the fact that it's distributed, so each of the contributor has his/her copy of the repository. This may seem counter-productive but it is actually very beneficial, having everything in one place tends to increase bottlenecks and liabilities.

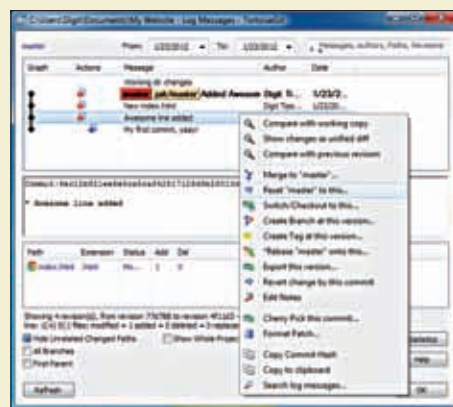
Git is primarily used for maintaining a project's source code. Anything that has mul-

Mac OS X, in case you'd like to work on those platforms.

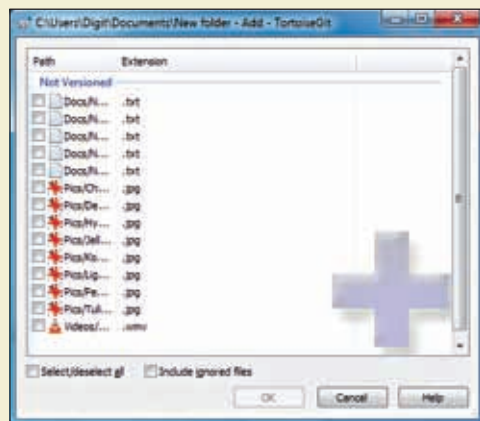
## Security in Git

Git shirks away from handling security by itself. It relies on the underlying operating system and communication protocols to handle access control to the

repository. In most cases SSH and HTTPS do the trick. In case you're maintaining a repository at your work and want to access the repository from home, you can do that using SSH. Most of the GUIs work on both protocols so you're assured that your data will remain safe.



You can revert to a particular commit



Stage your files before running commit on them

tiple versions and needs collaboration can be maintained by Git. You can use it to maintain - your resume, your daily budget, your homework, your projects (the non-coding ones also), photos, presentations, documents and so on. Here are a few tips to get you started

## GUIs for Git

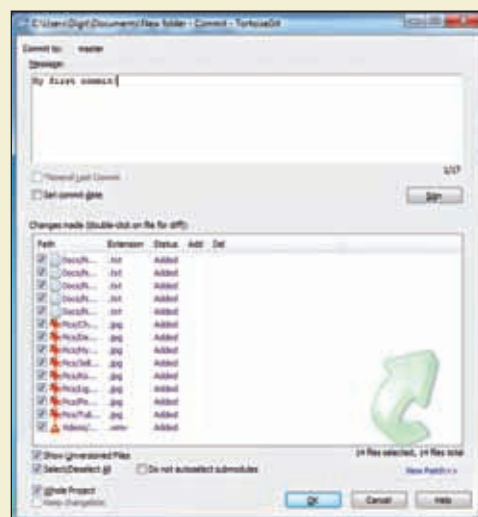
If you're a Windows user and seeing a command-line makes your blood run cold, then you're in for some good news. The first bit of good news is that Git is available for Windows (<http://bit.ly/yzt2rY>) and its not a cygwin port. The second bit of good news is there are a plethora of GUIs available for git such as TortoiseGIT, GitForce, git-cola and Git extensions. There are more GUIs available for Linux and

## Sync two folders using Git

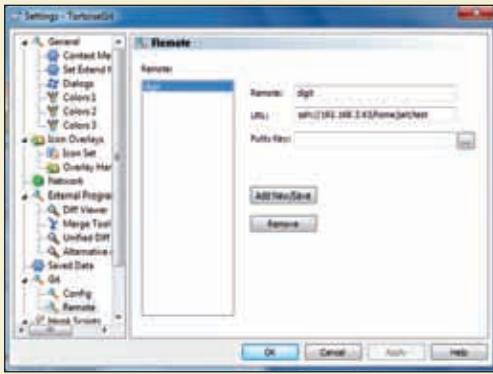
Make sure you are running msysgit and TortoiseGit before moving on. You'll also need to configure Git before you can commit data. Simplest way to go about this is to right-click on you desktop and in the context menu that appears, select TortoiseGIT sub-menu and then select "Settings". Select "Config" from the left-side pane in the dialog that follows and enter your name and email address.

Say you've got two folders in two different places, one at work and the

other at home. You can setup Git so that the contents of both the folders are synchronised. You start by navigating to the folder you want to sync and right-click in an empty area to get to the context menu. Inside the context menu select "Git Create repository here...". Add all the files you want into this folder, you can even make sub-folders if you want. Once you're done open the context-menu once again and select the "Add..." from the TortoiseGit submenu. In the dialog select the files that you want to add to the repo, now all the items in the directory are staged. Run commit by opening the context menu again and then selecting "Git commit -> master" in the dialog that follows select all the files that you staged. This repository is now updated and all changes are saved.



Running a commit on the repo



Configuring remote machine URL and name

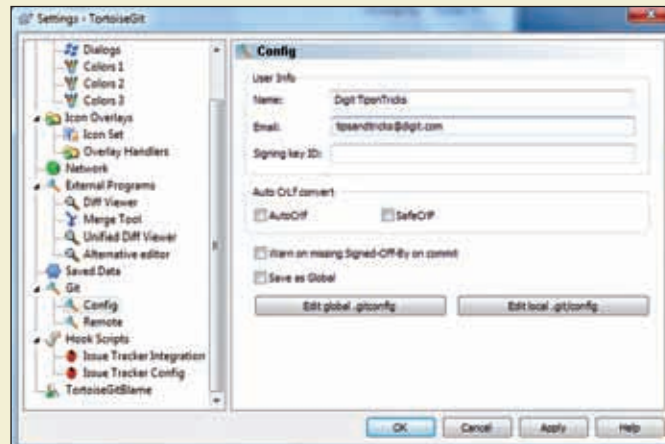
On the other side repeat the process from the beginning, but keep the folder empty. So that your data from the other end can be pushed here. To push the data from one end, open the context menu in the repo folder and select "Push..." from the TortoiseGit submenu. In the dialog that follows select remote, and click on the manage button to specify the remote connection. Specify the name (this should be meaning full something like Home or Office) for the connection and specify the URL for the remote machine. Before it starts copying it will ask you to login to the remote machine, enter your username and password (This will require you to setup an OpenSSH server at both the ends, you can get one for Windows called MobaSSH from here <http://bit.ly/ykZyeJ>). And thats all there s to it, all your files will be added to the remote location. When you make changes there the files can be pushed from that location to this repository. So that all your updates on that machine are reflected here.

## If you're afraid of Google

Google Docs is awesome with its auto-save, versioning and concurrent editing. In case you don't want to leave the cosy confines of your desktop office package (read MS Office) or you just don't trust the search engine giant with your precious data, but still want versioning, docu-

ment tracking then Git comes to your rescue. Have your colleagues pull the working directory to their local branches, and at the end of the day you can just merge all the branches back to the

master to make all the documents reflect the latest changes. In case someone messes something up you can always track the changes made and find out which changes were made by whom, and you can revert to the pre-merge situation by resetting the branch to a par-

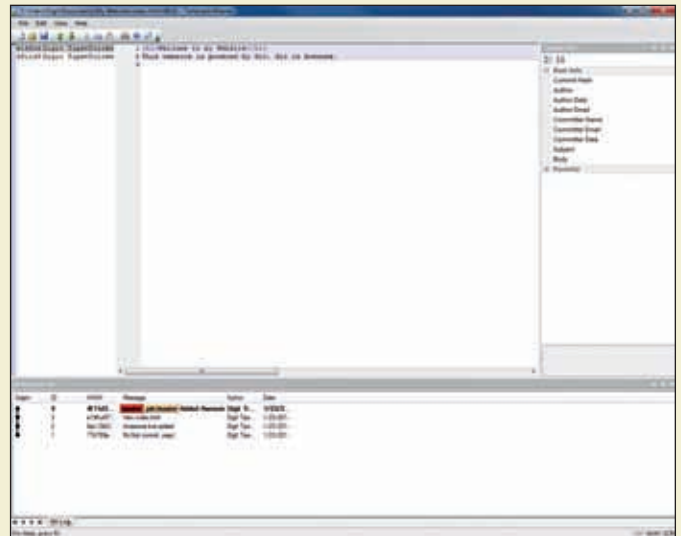


Configuring Git

ticular commit. The advantages in working this way are many, you wield a firmer control on versioning and tracking document changes.

There is a caveat here though, Git treats Word, Excel and PowerPoint files as binary files and running diff, to determine the changes will be difficult. You can force git to actually find the difference between two Word files by editing the .gitattributes file. To force git to find the difference between two Word files add the following line to .gitattributes

\*.doc diff=word



Lets play the blame game!

You could even save your Word files as a Word XML file and be able to determine the changes without editing the con-

time. Its infact extremely simple, select the file that you want to track, right click and select Blame from the TortoiseGit submenu. This will open a dialog, listing all the changes made in the last version and by whom. There is also a Git Revision List which will show when and by whom the changes were made.

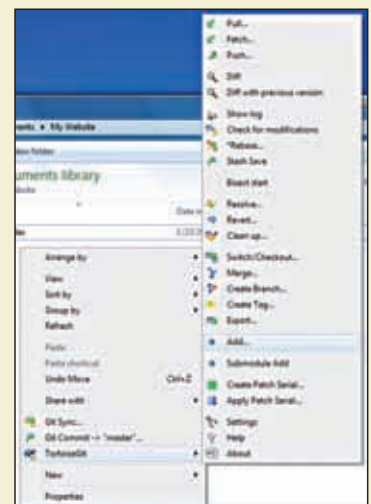
## Going back in time

To go back to a previous commit, inside the repo folder right-click and select Show Log from the TortoiseGit menu. After that you can right click previous commits and reset the branch to that commit. This will make the content same as what it was during that particular commit.

figuration file. There are no such facilities for Excel and Powerpoint, but you can use a comparison tool like WinMerge (<http://bit.ly/x3mW5y>) with Office plugin (<http://bit.ly/wDyRUT>) to manually find the changes made in the file.

## Whodunnit?

All this talk about many people working on the same file (albeit on their own copies, the changes are merged to one branch) may make you wonder about how you can track the changes that the files undergo through their life-



Git context menu



## FILE MANAGEMENT AND CATALOGING

Almost everyone these days has a lot of hard drive space and needless to say, most of that is filled up with an umpteenth number of various files. There might be personal images & videos, work stuff, music and other forms of entertainment. All this over time tends to pile up and then one fine day your hard drive is totally full and you have no more space for new stuff. Here is a bunch of things you can do to help you get rid of the clutter once and for all.

### Will power & hoarding

All of us have the compulsion to collect stuff that we like, however, sometimes these things tend to exceed their true value. There have been incidents of people collecting LOLCATS, when all they have to do is visit one of the numerous websites and have your fill. Well, hoarding is bad and you need to gather all your will power and go through the remaining steps. Believe us, it'll help you out!

### Arm yourself

There are multiple tools available on the Internet for managing files and while they each may offer some unique function, you need not go after everyone of them, remember what we talked about hoarding? You'll need one tool to defragment your drive, one to help speed up all the operations that you'll be performing manually. One such tool is 'FileMenu'. One way to describe this tool would be an amalgamation of various context menu registry hacks. It even has a browser window open up for copy/move options so you don't have to move away from the window you are currently working on.



Stop hoarding!

### Dump it all in one place

When you have a lot of files, there are bound to be a few files which you don't know what to do with. So when you come across a file which you can't assign into a category, you simply put the file into a dump folder. Soon enough this folder will be full off files pertaining to all sorts of media. Delete everything that is of no use.

### Defragment your drive

Some of the steps that are about to follow requires software to go though your hard drive one file at a time so defragmenting all the drives you have would speed up all the remaining steps. Before you go about defragmenting the hard drive, run any clean up software to get rid of temporary files. Use any software for the purpose, Ccleaner should get the job done. Then for defragmenting the drive, one can use Defraggler which is donationware and is pretty good at getting the job done. If you prefer to use the in-built disk defragmenting software then you can do so.

### Get rid of dupes

Duplicate files eat up valuable hard drive space and should be taken care of at the earliest. Doublekiller is one pretty neat software to get the job done. It allows you to find duplicates using

multiple criteria. Duplicate files can be listed if their CRC32 hash, name, size and/or date of creation are the same. You may choose to skip one or two criteria to suit your needs. Be careful while using the software though, you may end up losing valuable files if you do not pay attention. While we were checking the software out, Doublekiller ended up picking the licensing files from one of our computers, deleting which would have left all the software useless. So pay attention while deleting the duplicates. Only include the folders which you are sure about, try to exclude the 'Program Files' directory altogether. Click on 'Check the last dupes' under the Doublekiller tab and delete all the checked files. An alternative is Auslogics Duplicate File Finder, however, it does not have all the options that Doublekiller offers for you to fiddle with. Now that you've gotten rid of the dupes, let's move onto organising your stuff.

### Assign default directories

Download managers have the option of allocating files into specific folders depending upon the file type. Internet Download Manager (IDM) for example, provides for different folders for different file types. Make

use of such features to have your files put into their respective folders. If you have a folder for music then set the default directory for music files to that particular folder in IDM and so on for every file type.

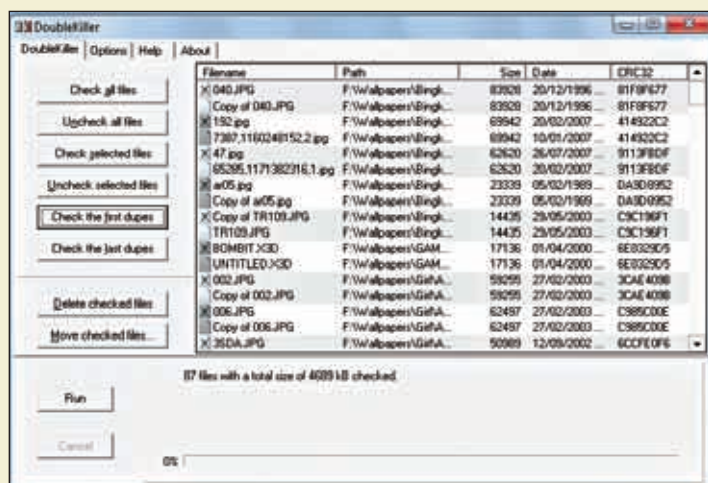
You may change the default directory for My Documents to another partition on the hard drive entirely, this will help you to maintain consistency over multiple OS installations on the same computer. You can do this by right-clicking on the My documents, select 'Properties' and then modify the 'Target folder location'. For linux, the steps may vary in different distributions. Here, we are listing the steps for Ubuntu.

Ensure NTFS partitions can be accessed in Ubuntu, for that to happen type in the following commands in the terminal. (Open a terminal window using Ctrl+Alt+T)

```
sudo apt-get install ntfs-config
```

```
Accept all the prompts, then type, gksu ntfs-config
```

This should automatically configure all the NTFS partitions to be mounted in Ubuntu. Once this is done, you'll need to edit the file system table file, i.e. 'fstab' file to create an auto mount entry for your Documents folder. The syntax of an fstab entry is :



Use Doublekiller to get rid of the duplicates

| Fields             | Description                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <device>           | The device/partition (by /dev location or UUID) that contain a file system.                                                                                                                                              |
| <mount point>      | The directory on your root file system (aka mount point) from which it will be possible to access the content of the device/partition (note: swap has no mount point). Mount points should not have spaces in the names. |
| <file system type> | Type of file system.                                                                                                                                                                                                     |
| <options>          | Mount options of access to the device/partition.                                                                                                                                                                         |
| <dump>             | Enable or disable backing up of the device/partition. This field is usually set to 0, which disables it.                                                                                                                 |
| <pass num>         | Controls the order in which fsck checks the device/partition for errors at boot time. The root device should be 1. Other partitions should be 2, or 0 to disable checking.                                               |

#### Parameters of an fstab entry

[Device] [Mount Point]  
[File System Type] [Options]  
[Dump] [Pass]

Editing the fstab files involves multiple parameters, refer to the Ubuntu website for the detailed steps needed to achieve this.

<https://help.ubuntu.com/community/Fstab>

Once you are done adding the entry to fstab, you should be able to access your windows documents in linux, do the same for your media files as well. Keep backup files separate and only accessible in Linux as it is a much safer environment from malicious software. Now, all your documents will be available in one central location no matter which operating system you are using.

#### Intelligent naming

When making folders for cataloging your files, ensure that

- The folder names are short and to the point.
- Avoid having way too many folders under any category.
- Maintain a nomenclature method and remain consistent to that method.
- Keep your ongoing work separate from the work that has been completed.
- When there are too many subfolders then consider grouping them under alphabetized folders.
- If you absolutely have to keep duplicates then have short-cuts instead of copying the

entire content completely. However, don't do the same for back-up, obviously!

#### Archive, backup and catalogue

You can't store everything on your machine and even if you can, then don't! Keep a separate folder for archive purposes, maintain a similar folder structure as you do for your normal files. Whenever you come across a file that you might need in the future but have no use of for now, archive it. Then, as soon as you hit 4.7GB or 9.4GB for those using Dual layer DVDs, burn



Circular labels using cdrLabel

it onto a DVD. You might want to check out cdrLabel. Insert your DVDs into the DVD drive and run the software, it'll scan through the entire contents and provide you with an option to print out labels for jewel cases. The paid version provides for more customisability options for the labels and to edit images. Further, functionality is enhanced by means of various plug-ins available on their

website. You can make jewel case inlays or labels for pasting directly onto the discs. Using a file list generator can prove to be a great alternative to the indexing service in your operating system.

#### Index your directories

Once you are done with all the rearranging of the files, add the newly created folders to the Indexing service. Access the 'Indexing Options' from the Start Menu, Select the Modify option and add all the folders you want the OS to index for you. This will cause the indexer to index all the files that are in the included folders. If it so happens that some of the files were skipped by the indexer, then you will need to add the file type to the indexer. In order to do this, switch to the 'File Types' tab under advanced options and include whichever file type was skipped initially and rebuild the index. This helps out with the search function, however, enabling the search function does reduce your system's performance a bit. If your computer is of a newer generation then this would hardly register a dip in your computer's performance.

#### Final defrag

To drive a nail in the coffin of your clutter problem would be to finish off with a round of defragmentation. Try out O&O Defrag which offers multiple

ways to defragment your drive. You can defragment using any of the 5 available options viz. according to Stealth, Space, Name, Last Accessed & Last Modified. Last accessed has been proven to offer slight boost in system performance.

#### An ongoing process

Maintenance is an ongoing process, though following the aforementioned steps will help out with your situation, it would only be effective for a short term. Soon enough more and more files will pop up here



O&O Defragmenter

and there, specially if you have multiple persons using your computer.

So follow these steps:

- Make a schedule for computer maintenance. There might be atleast once a month that you like to clean up your desk and your computer. If not, then assign one.
- Delete unwanted & unused files regularly. Run Ccleaner or any similar software. You may schedule a task for the same.

#### Voila!

That's it! You are done. If you've religiously followed the steps mentioned above then by now you have probably done away with a lot of unwanted files and now have a good system in place to manage all your files. ■

*Tried something creative using the above tips? Drop us an e-mail at [readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com) or post it on our Facebook page at [www.facebook.com/thinkdigit](http://www.facebook.com/thinkdigit) or on Twitter @digitindia*



# worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

## (MUST READS)



### FLASH MOB TO FLASH ROB

The founder of flash mobs Bill Wasik discusses the perils of self-organised, hyper-networked gatherings using social media. The ugly side of it involves rioting that took place in Britain last year. A very important lesson to be learnt by those who want to organise flash mobs everywhere in India nowadays

<http://goo.gl/qW8E9>

### SAMSUNG NEXUS REVIEW

Not only does Anandtech review the handset, but also takes a very fine-toothed comb look at the Ice Cream Sandwich OS, Google's underlying strategy, the system-on-chip and many more things

<http://goo.gl/m6ufm>

### SEARCH PUSHING GOOGLE+?



David Sullivan gives some real life examples in this analytical piece, explaining how Search Plus Your World is pushing Google+ over other social networks

<http://goo.gl/qCCjh>

### JIMMY WALES TALKS

In the light of the recent blackout by Wikipedia and a host of other sites in opposition to anti-piracy bills SOPA and PIPA, New York Times interviewed Jimmy Wales, the founder of Wikipedia to get his side of the story

<http://goo.gl/o2QqR>

## (The Verge Corner)

### PAPER TECH SPECS STILL BETTER THAN IBOOKS



Apple announced iBook 2 and along with it also showcased the iBook Author which enables you to publish electronic books. In this interesting essay, The Verge takes a look at how Paper technology is still better for academic books <http://goo.gl/VdIJr>



#### Product line fatigue setting in?

Acer plans to cut its laptop production by two-thirds and Motorola Mobility will slow the incremental innovation of smartphones. Has too many gadgets coming into the market too soon, created a sort of product line fatigue?

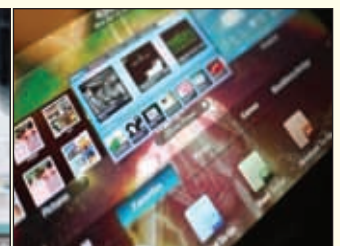
<http://goo.gl/XWztE>



#### Inside Microsoft's Envisioning Lab

Futuristic look at the Office suite, a 28-foot touch-enabled wall with a laser-based touch system, a visiting card with a context-based touchscreen and many more future tech seen at the Microsoft Envisioning Lab

<http://goo.gl/SkSvR>



#### Long road to BB10

BlackBerry platform is facing a lot of flak, with dropping sales of BB handsets and the PlayBook tablet. And now with BlackBerry 10 OS-based devices coming out in the second half of 2012, does BB really have what it takes to make a comeback? Read on

<http://goo.gl/EROYO>

**HATERADE**

This essay looks at how the culture of anonymous internet commenting is preventing people from taking part in a dialogue based on sense and logic. The author takes her pre Web 2.0 era article and discusses how it wouldn't have had the same impact today; the comments would have been the main news <http://goo.gl/tUybH>

**SOPA 101**

You must have heard a lot about SOPA and PIPA last month. It's an American piece of legislation that was being discussed in the Senate and blacklisted by a majority of the popular web sites. But what does it mean to people and web sites outside the US? ArsTechnica gives an analysis <http://goo.gl/QCaIZ>

**GOOGLE'S STORE VIEW**

What happens when you mash up Google Street

View to take it inside commercial stores of participating businesses. Here's an example of Google Store View inside the B&H photo and video store <http://goo.gl/UH5G8>

**10 FREE ONLINE LEARNING RESOURCES**

Coding, HTML5, MIT Open Courseware and more – a list of top 10 learning resources online. And like the saying goes, the best things in life come for free, so do the sites listed here <http://goo.gl/bQZEv>

## Facebook Timeline apps: should you use them?

Is it worth it having your activity from other web sites cluttering your Facebook stream? Read on to find out...

- By Jill Duffy



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Facebook yesterday officially relaunched Timeline with Timeline Apps. Timeline is an opt-in feature on Facebook that replaces a user's wall and profile with a graphical and chronological timeline of events of his or her life on Facebook, as well as other life events that they choose to add. The new app-Timeline integration, in a nutshell, posts activity from other Web sites and services that you use to your Facebook Timeline.

For example, enable the image scrapbooking site Pinterest to connect to your Facebook Timeline, and Pinterest will automatically post activity on your Timeline anytime you "pin" or save a new image to your account.

All the activity from each app gets grouped into its own box on your Timeline, rather than clobbering your stream with each individual action you take on a third-party site. Is this new integration a good thing? That depends on how you use Facebook, but here are some points that might help you make up your mind.

### Apps for Facebook Timeline

At launch, 80 apps are promoted on Facebook's Timeline Apps informational page. To give you an idea of the breadth of topics and interests these apps cover, here are some



of the most well known: Airbnb, BuzzFeed, The Daily, Digg, Fab, Foodily, Foodspotting, Hulu, LivingSocial, MapMyFitness, Pinterest, Rhapsody, RunKeeper, Slacker, Spotify, StubHub, Ticketmaster, TripAdvisor, Tumble.fm, Where I've Been, Words With Friends, Washington Post Social Reader, and Yahoo News.

### How to enable apps for Timeline

To turn on an app for Facebook Timeline, you'll need to first have the app connected to your account. You can see what apps you currently have in Account Settings > Apps. For some apps, it's clear how to turn on the "post to Timeline" feature right from

the app itself. See the image from Pinterest for an example. With other apps, it's a little more apparent what you're doing when you enable the integration from within your Facebook Account Settings directly.

### Sharing and privacy

One nice feature of the apps integration is that you can toggle the privacy settings for all Timeline posts that come from the app in one shot. In your Account Settings, if you tell the Washington Post Social Reader App to make its Timeline activity visible to "only me" or just "friends," it will always follow those rules.

Additionally, you can delete or hide activity on your Timeline post-by-post, although it's a little confusing and limited. What's confusing



## KODAK'S MISTAKES

Kodak and FujiFilm were arch rivals at one point of time – in the pre-digital photography era. But Kodak has just gone downhill since the last couple of years, while its competitor adapted to the changing scenario in the imaging and photography world. Economists takes a look at how Kodak's complacency has led to its eventual bankruptcy filing  
<http://goo.gl/p4XJo>

## STAR WARS UNCURT



What happens when you break up a Star Wars movie into 15-sec capsules and request volunteers across the world to film/interpret it in their own way?  
<http://goo.gl/OfGBk>

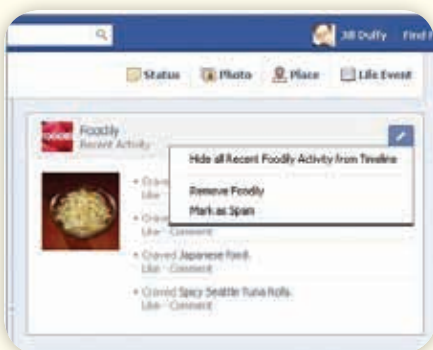
## SMARTPHONE PATENT WAR INFOGRAPH

Samsung fighting Apple, Apple fighting HTC, Motorola fighting Microsoft, Oracle fighting Google.... Yeah we know it's a hard task keeping track of all the patent lawsuits being fought around the world. Here's a handy infographic with an arrow diagram of who's fighting whom  
<http://goo.gl/Pizkp>

## THE WEEK THAT KILLED SOPA



With all the web site blackouts and protests against the Stop Online Piracy Act (SOPA) and Protect IP Act (PIPA), it was hard to keep track of what happened when in that week  
<http://goo.gl/EcTqo>



is the button that triggers the option is an "X" next to the post, which makes it seem like you'll be deleting the post. But press it, and you'll in fact be able to show, hide, or delete it. Below these options are more settings to stop the app from posting to Timeline, or revoke its Facebook integration altogether.

## Who wins? Who loses?

Very important: If you opt-in to Timeline, you cannot opt out. Many Facebook users I know did not understand this when they

signed up for Timeline. Once you turn it on, you can't cancel it, so make sure you want the Timeline to permanently replace your wall and profile page before you start experimenting with Timeline app integration.

That said, if you use Facebook as a way to share a lot of content that you like, whether it's articles you read or music you like, the Timeline app integration—like the Facebook Ticker, which also posts about your activity from other sites and services via a small inset on the newsfeed page—will make it more convenient for you to do so. You win.

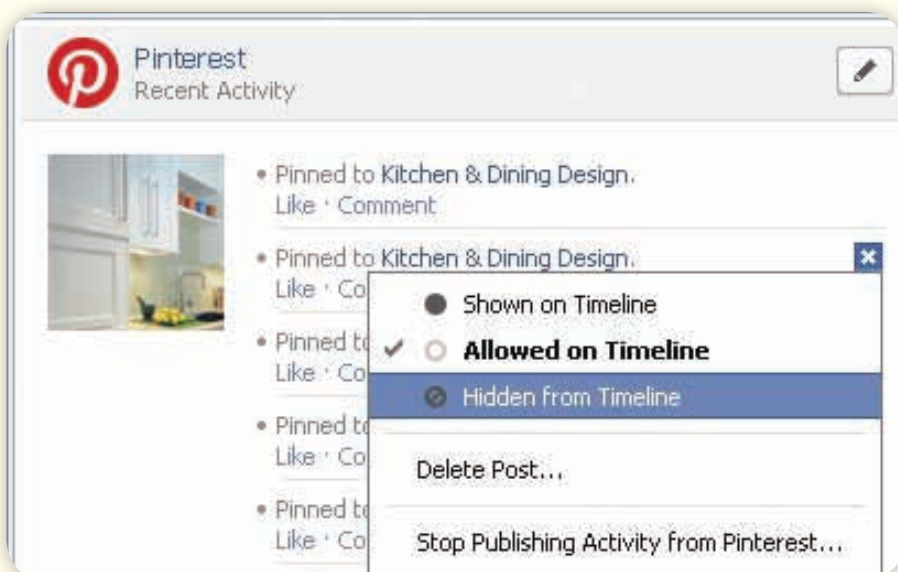
If you see yourself as more of an absorber of content, picking up things other people post, the apps integration is a mixed blessing. On the one hand, you'll likely be able to see more stuff that all those over-sharers make public on their feeds and Timeline. On the other hand, you can't just click through a link to reach some of the content, a snafu that has frustrated me (and others) for a very long time. I see it most often with news apps, like The Wall Street Journal and Yahoo



News. If a friend reads an article that posts automatically via the app and you click it, you can't simply read the article. Instead, you're invited to authenticate the app, too, and if you don't, you can't read the article. I am forever opening up another tab in my browser to search for the words in a headline because I don't want these particular app integrations. I like the content, but I don't appreciate the inaccessibility.

Another party to consider when thinking about who wins and loses with Facebook app integration is the businesses that make these apps. Is there such thing as too much integration with Facebook? Is it good for business? On the one hand, I think the case has always been made that "you have to reach the audience/market where they are, and they're all on Facebook." But on the other hand, letting the audience so easily stay on Facebook without ever landing on the business' Web site could result in less traffic for the business.

The flip side of the business question brings up the biggest winner of all: Facebook. Integrating app activity onto users' Timelines is another way to keep Facebook traffic on Facebook. Users never have to leave the page to see where else their friends are active online. If it's all on Facebook, you're all on Facebook.



## ADORAMA TV

Want to learn about photography but are too bored to go through long tutorials and write-ups on core concepts? Check



out Adorama TV's Digital Photography One on One section which has informative videos teaching you everything from Metering to Model release forms and everything in between  
<http://goo.gl/06CqE>

## (QR Code)



For a list of all the links from this section head over to  
<http://minmu.net/WVFeb12/> or scan the QR code above with your mobile device.

## (PRODUCT LAUNCHES)

### NIKON D4



The D4 is the new flagship camera from Nikon. It sports a 16.2MP CMOS sensor, a 51-point AF system and ISO going up to 204,800 at Hi 4 level. It also has support for a new format of card called the XQD card. All this and more at a jaw-dropping \$6000 (₹3,10,000 approx)

### ACER ASPIRE S5



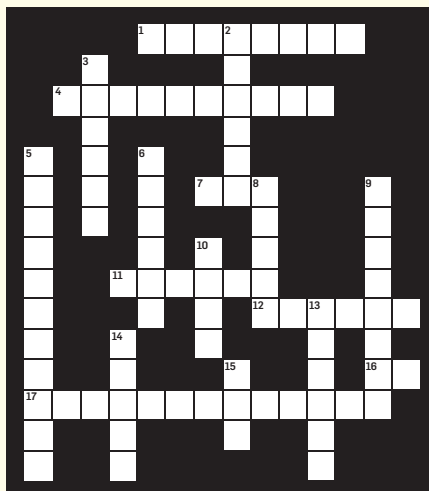
Touted to be the world's slimmest ultrabook, the Acer Aspire S5 is the successor to the S3, and it measures only 15 mm at its thickest end. It houses Intel Sandy Bridge processors, has a 13-inch screen and a Thunderbolt port on the spine which is retractable. Pricing is still under wraps

### SAMSUNG GALAXY NEXUS



Samsung launched the Galaxy Nexus, the first phone to sport Android's latest operating system – Ice Cream Sandwich. It features a face unlock mechanism, is based on TI OMAP 4460 SoC and is 4G capable, with 1 GB of RAM. It's available on eBay for a whopping ₹44,500 at the moment

## CROSSWORD



### Across

1. The answer to life, the universe and everything [5, 3]
4. Owner of the now-defunct Megaupload [3, 7]
7. Creators of Siri
11. Makers of first Intel-powered smartphone
12. Codename of Nvidia's upcoming graphic card architecture
16. The next iteration in 802.11x wireless protocol
17. RIM's new CEO [8, 5]

### Down

2. This blogging site just underwent a revamp
3. Google closed this service recently
5. HP's new ultrabook [4, 7]
6. Mario boss name
8. Apple launched a new iteration of this software
9. Venue for CES 2012 [3, 5]
10. Everyone on the internet is talking about this
13. Handling virtual memory inside a PC
14. Name of Twitter's mascot
15. BlackBerry's next OS

ABSOLUTE  
TIMEPASS

## Top 3 YouTube Picks

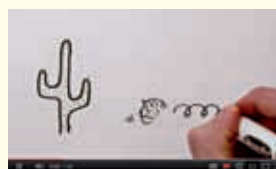
Make sure your boss doesn't catch you goofing off with one of these playing on your screen



### Evil Kitty

Duration 00:20

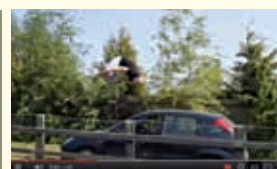
This kitten surely has something going on in her head. Look at that stare!  
<http://goo.gl/8lyql>



### Round Triangles

Duration 01:45

Why circles are round (and triangles too!) by Minute Physics  
<http://goo.gl/s5Aau>



### Don't try this at home

Duration 02:46

Watch professional stuntman, gymnastics coach and free runner Damien Walters  
<http://goo.gl/NFmLv>

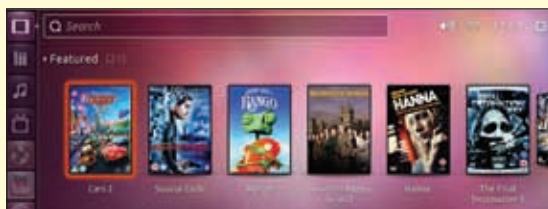




<Interview>  
Håkon Wium Lie, CTO,  
Opera Software, and  
creator of CSS,  
on pg. 64. For full  
interview visit:  
[devwx.in/feb-12-hwl](http://devwx.in/feb-12-hwl)

## Ubuntu on a TV near you!

Canonical has big plans for Ubuntu, and they involve not just desktops and laptops, but also smartphones and TVs. Linux for TVs isn't new; some television manufacturers already use versions of Linux in television sets and set-top boxes. Google, too, tried to offer an Android-based experi-



ence for TVs, which doesn't seem to have taken off much. Boxee, Roku, and TiVo all use Linux in their software for set-top boxes, and there are numerous

Linux-based free and open source solutions such as XBMC and GeeXbox.

Certainly, this would also open up opportunities for developers who could access a growing market for apps catering to smart TVs. >

[Read this article online at devwx.in/feb-12-n1](http://devwx.in/feb-12-n1)

## Microsoft embracing Linux?

Microsoft could very well be opening up their Azure service to run Linux servers in addition to Windows servers.

Although it might seem rather odd for Microsoft to allow Azure customers to run Linux; on the other hand, it might just make the best business sense. Windows Azure might be a lucrative offering for those looking at a Windows-based cloud platform,

but it's unlikely that those who have invested in Linux-based solutions will switch to Azure. On the other hand, Azure's competitors such as Amazon Web Services and Rackspace offer Windows and Linux-based cloud solutions, thus making them a lot more lucrative for those seeking Linux-based or hybrid Windows and Linux mixed clouds.

A few years back, Microsoft had made a similar shocking move by contributing some code

to the Linux kernel – although it may just have been as the result of a GPL violation. Linux on Microsoft's Windows servers, stands to improve the sales of Windows licences. Similarly, now by opening up Azure to Linux servers, it stands to make it more lucrative to those who need Linux servers as part of their cloud. >

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### \*footer

#### \*Mozilla Puts Firefox Extended Support Release into Action

>> Mozilla's rapid release cycle has been under a lot of scrutiny, not just because of the rapid releases, but also the short end-of-life periods each release would have. To the surprise of many, Firefox 4 ceased to be supported when Firefox 5 was released.

<http://devwx.in/feb-12-f1>



#### \*Matt Mullenweg

>> The creator of WordPress shares his story with devworx, and how WordPress has moved beyond just another blogging platform. Read online:

<http://devwx.in/feb-12-f2>

#### \*Apache Hadoop 1.0 released

>> Hadoop, the open source framework for creating distributed applications has just been updated to version 1.0. There is only so much power you can put into one single system, and thus most popular web applications today require multiple servers to handle the kinds of workload that they receive. Read more about developments on Hadoop 1.0 at:

<http://devwx.in/feb-12-f3>

### \*side panel



#### \*Tizen gets 'bada' boost

>> Samsung has been supportive of Tizen from the get-go, and now it's merging its home-grown mobile phone OS, bada with Tizen:

<http://devwx.in/feb-12-bt1>

#### \*FreeDOS 1.1

>> FreeDOS is a free and open source operating system that aims for MS DOS compatibility. It's open source under the GPL. FreeDOS has also been included in a number of commercial systems.

<http://devwx.in/feb-12-sp2>



#### \*Calligra for Windows available

>> LibreOffice and OpenOffice.org aren't the only open source office suites around. Calligra, a KDE only suite lets you edit docs and more. Read about Calligra for Windows.

<http://devwx.in/feb-12-sp3>



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# Virtualized Storage

## COMING WITH Microsoft's Windows 8

<There's a lot to like, and a lot to hate; but there's one brilliant feature in Windows 8 that's hard to neglect, for now at least.> **By Kshitij Sobti**

There are several new features that get added to each Windows version that doesn't get the highlight it deserves. In Windows 7, it was the ability to mount and boot from a virtual hard drive. Windows 8 will feature a major upgrade to the way Windows can handle storage devices, with a new feature called Storage Spaces. This should end a majority of the storage woes that most people have. There are three key "features" of Windows Storage Spaces that we should all be excited about, and they are:

- Storage Pooling
- Thin Provisioning
- Resiliency to Hardware Failures

What's interesting isn't just the availability of these three features, but also how they work together. Perhaps you're already familiar with these terms and are already excited about what Windows 8 could hold. We won't hold you back any longer.

### Storage Pooling

Hard drives have this way of shrinking over time, don't they? Perhaps not in actual capacity, but in the adjectives used to describe them. In just a few years' time, 80 GB hard drives went from "Wow! That's a lot!" to "Where do I backup the other half of this Blu-ray rip?"

One of the problems with the way storage works in Windows right now is that adding a new hard drive doesn't give you more space in each partition, instead it gives you another blank area to create new partitions in. This means reinstalling Windows, and/or moving all your documents and files over to a new hard drive; a tedious process. Over time, one tends to replace hard drives, even if they are working fine and is under warranty. It is just more convenient to have one larger hard drive than a few smaller ones having a few partitions each.

A better solution would be to pool, or combine all your hard drives into one storage space, and create partitions — without worrying about where one hard drive ends, and another begins. This is what storage pooling is.

In Windows 8, you'll be able to simply add a new hard drive, and have its capacity available to you in one combined pool that encompasses all your hard drives. This way you can have a 600 GB partition across two 500 GB hard drives. Windows 8, however, will enable something even better, as you find out next.

### Thin Provisioning

Let's say you bought a 500 GB hard drive a few years ago, and created a 100 GB Windows partition, a 200 GB partition for your videos, a 100 GB partition for your music, and another 100 GB for your documents.

Now, your partition for videos could get exhausted, while your partition meant for documents could have a lot of free space. There isn't much you can do to expand your videos partition to take up the space from the documents partition. You could at most take some space from the Windows partition.

If you have pooled your storage in Windows 8, it will offer a new way to manage storage. You will be able to create partitions based on the amount of space required for them, instead of the amount of space available.

Thin provisioning, means to give the appearance of having more resources than are actually available. In Windows Storage Spaces this means you will be able to create a 20 TB videos partition, a 1 TB music partition, and a 500 GB documents partition, all on a 500 GB hard drive. All of this storage won't really be available of course! There is no new magic compression scheme in use here. The partition capacities are mostly meaningless here.

You can start with a 500 GB hard drive, with the partition structure described. As your usage reaches 500 GB, you can just add another hard drive, say of 2 TB. Now Windows will transparently start using space from both hard drives till you start reaching 2.5 TB usage. You can further extend your available capacity by adding more hard drives.

No need to worry about running out of space in one partition and having to re-partition. Windows will only use the storage capacity as it is available, and allocate it to the storage volume that needs it. Due to the inherent inflexibility of the older system, if you misestimate, and end up filling your documents drive before your videos drive, you have a problem. With thin provisioning, only the drives actually storing something will take up space so you might as well end up using all the 500 GB of your documents volume while your videos volume is empty. Extending the size of existing volumes is possible, so there's nothing to worry about, even if you use up a volume entirely.

### Data Resiliency

Hard drive failures can be a tragic occurrence indeed, despite your best efforts. To protect from hardware failures, your data should be stored redundantly.

Storage Spaces will help here as well, by supporting different levels of resiliency. For this, Storage Spaces support data mirroring across multiple separate hard drives. Data on storage volumes that have mirroring enabled will automatically be stored on multiple hard drives. You can even select how much redundancy the data should have, either two separate hard drives, or three. At any point you could then pull out any one of the hard drives — or if one of your drives should fail — your data would continue to be accessible. The faulty hard drive can be replaced with a new one, and windows will

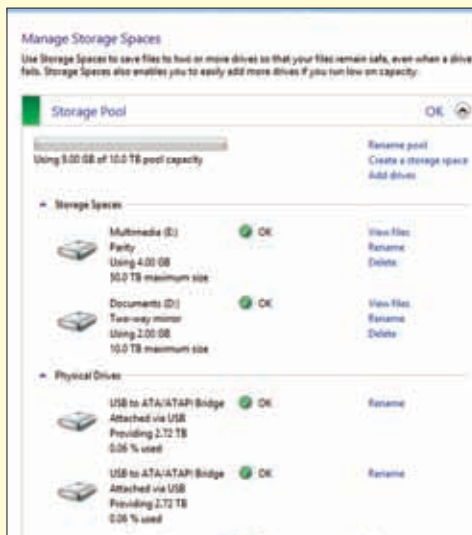


rebuild your mirrored data on it to ensure that your desired level of resiliency is maintained.

Of course, this also means that for any data stored on a mirrored partition, double the space would be used up – or even triple. This might be OK for really important, or really small data; however, for large data sets such as videos this can be really inefficient and expensive. For those, Windows supports another form of resiliency, parity. To know more about what parity means, check out the box on the side. Parity has lower storage space requirements than mirroring, which blindly maintains multiple copies; however, it is more CPU intensive, and performs a lot more random I/O.

### Working in Sync

If you're excited about these new features, know that many of these have been available since as far back as Windows 2000! So why bother getting excited?



### A STORAGE POOL OF MULTIPLE EXTERNAL HARD DISKS

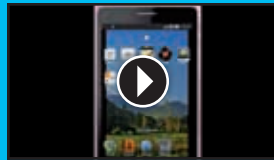
As we said before, it's not about these new features, but how everything works together that is more interesting. For one, all of this is now user-facing, with a graphical, easy to use interface in "Control Panel". Secondly, most of this is transparent to the user once set up.

All the user has to do is connect a new drive, and add it to the storage pool. You can even mix up USB drives with internal ones, so you can continue expanding even when your internal capacity for adding drives is reduced.

With the combination of these features it is also easier to continue expanding your storage capacity even when you run out of internal and external ports. If you have enabled mirroring or parity on all your storage volumes, you can just remove your smallest hard drive and replace it with a larger one. Since the data is stored in a redundant manner, there will be no data loss,

## \*pointers

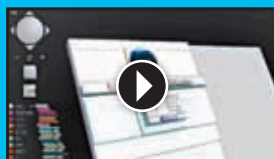
>>Nuggets of cool code at work.



### \*A Look at Tizen

>>The Linux Foundation has released the Tizen SDK, a smartphone and tablet OS. Tizen would support HTML5 apps. Duration > 09:16

<http://dvwx.in/feb-12-p1>



### \*Upcoming Firefox Developer Tools

>>Tilt lets you visualise web pages. It creates a 3D representation of the document, to display, and analyse the DOM. Duration > 02:06

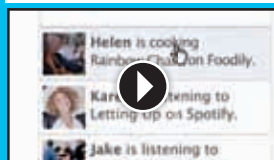
<http://dvwx.in/feb-12-p2>



### \*Early look at KDE 4.8

>>The KDE desktop is best known for its Plasma Desktop, the default working environment available on several Linux distros. Duration > 05:47

<http://dvwx.in/feb-12-p3>



### \*New class of social apps on Facebook

>>Facebook recently unveiled the Timeline, and now apps you could use with the new UI. Express yourself through all the activities you do – the music you love, the recipes you're trying out, the morning sprint, and more. Duration > 01:18

<http://dvwx.in/feb-12-p4>

## Parity

>>Parity is best explained, beginning with the basic parity bit. How can you be sure that the data being transferred is error free? Comparing it with the original data is not an option, so the indications have to be within the data itself. The parity bit is one such mechanism. A parity bit – a single zero or one – is added to any transmission in order to help detect errors. It does this by ensuring that the number of 1s in any sequence of bits is either always even, or always odd.

For example, on some transmission channels which maintain even parity, a 1 or 0 could be added after every 7 bits to ensure that the number of 1s in any consecutive 8-bit sequence is even.

So, for a sequence of 001011, a parity bit of 1 will be inserted, making the sequence 1001011. In a sequence 1011010, a 0 will be added, making the sequence 01011010. In case of an error it is likely that you will get a sequence of 8 bits that has an odd number of ones, you'll know there's been an error.

We will not know what that error is, nor can it be corrected; but it can be detected. Now let's take another example, a block of 7x7 bits of data:

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 |   |

This table has one parity bit added for each row and one for each column. Now if only one bit in this table is disturbed, the parities won't match, and by intersecting the row and column with the wrong parities, it is possible to isolate the incorrect bit and recover from the error.

This is an extremely simple and flawed example but it serves to illustrate a point; that using 14 bits of data we can detect errors and correct as many as 49 bits of data. A similar concept is used in the Windows file systems and other parity systems to recover from errors in large amounts of data using much lesser than an entire copy.

and Windows will automatically detect the new storage added to the pool and start copying data back to it to ensure that the level of redundancy you required is maintained. >

# >>“It’s better for developers to use the web as a platform”>>

>>**Håkon Wium Lie**, CTO, Opera Software, on CSS, and how it’s changing the way we consume content online!



>> **CSS3 is being developed in a modular fashion. What are some of the new features being recommended in CSS3?**

Yes, development in CSS3 is now modular. Currently, there are around 20 to 30 modules. Border radius in CSS is one of the core mature functions. Using CSS transitions, we can create simple animations, by, writing few lines of code. This would otherwise take a lot

of effort in JavaScript or Flash. This is much simpler to do, and is also supported across the board. Besides, Flash wouldn’t have worked on all devices anyway, right? But these kind of things will work across all devices very soon.

>> **If future additions to CSS will be via modules, will there ever be a CSS4?**

Right, CSS3 is very different from the CSS 2

and CSS 1 specs. They were single specifications. CSS3 being modular, it makes it hard to answer the question, when will CSS3 be done, because it will, never, really be done. Also with time, some of the stuff, like rounded borders, may be people would want to do more complex stuff with rounded borders. May be for that, there could be a CSS4.

>> **CSS is now being used even outside of web applications, for example in GTK+. What are your thoughts on that?**

Well, in order to make something a programming platform, you need a programming language as well, and CSS is not a programming language. You have a programming language for the web and it’s called JavaScript. And along with HTML and CSS, those three are really the foundation of the web. That’s what those who want to write web content will have to deal with.

[Read the entire interview online at dvw.in/feb-12-hwl](http://dvw.in/feb-12-hwl). Stay up to date with information at [dvw.in/dvw-fb](http://dvw.in/dvw-fb)

## \*distro dose



### FreeBSD 9.0

>>FreeBSD is a free Unix-like operating system with origins in BSD Unix. You’ll find FreeBSD in the devworx section on the attached DVD.

<http://dvw.in/feb-freebsd>



### Gentoo 12

>>Unlike conventional software distributions, with Gentoo, the user compiles the source code locally according to their chosen configuration.

<http://dvw.in/feb-gentoo>

## \*from the shelf

>> suggested reads, that you could consider buying



About Face 3.0:  
The Essentials of  
Interaction Design  
<Price> ₹367

>>This new edition includes new content relevant to the popularization of new Web technologies and mobile platforms.  
<http://dvw.in/feb-12-bk2>



Refactoring: Improving  
The Design Of  
Existing Code  
<Price> ₹440

>>Refactoring is about improving the design of existing code. It’s the process of changing a software system without altering code behaviour.  
<http://dvw.in/feb-12-bk3>

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**First Z77 Ivy Bridge boards**

Manufacturers have started revealing motherboards based on the Z77 chipset for Intel's Ivy Bridge processors at CES 2012

**Diablo III in the UK**

By the time you're reading this, Diablo III will have released on 3<sup>rd</sup> February in the UK. Look out for the review in coming issues

# The future is 3D

Autodesk is a company that needs no introduction. Some may say it's the world leader in 3D and engineering design software. We recently met with Rob Hoffman, Senior Product Marketing Manager, 3D Media and entertainment at Autodesk Inc., and discussed the future of Autodesk. Here's what he had to say

**The next big thing**

There's so much going on in the 3D industry. Movies such as *Avatar* have spoiled the audience with special effects and animation and their expectations have only gone up. We want more complexity, more detail, the next movie needs to further blow our mind. Designers are being asked to work on bigger and more complex projects, but with less time and a smaller budget. What Autodesk is trying to do is bridge that gap between expectations and resources. We're trying to do that with what we're calling "Digital Entertainment Creation", which is basically to make the creation of content easier for everyone, while still giving them the power to be completely creative. To do this, we're working primarily on standardisation.

**The need for standardisation and distributed production**

When it comes to creating something like a movie, there are a lot of tool sets involved. These tool sets need to be able to "talk" to one another. It should be easy for artists to switch between such multiple tool sets and get the work done. Using just one software such as Maya or 3DS Max is not necessarily the most efficient way to go about creating your work; you'll need multiple tools and it's essential that they



work together. One way Autodesk wants to do this is by standardising the formats and even the interface elements, allowing artists to switch between their tool sets and not feel lost. Autodesk also wants to work on providing a broader palette of tools for artists to draw from.

Autodesk has also adopted a format, which was developed by Sony Imageworks and Lucasfilms, known as Alembic. The main advantage of which is the comparatively small file size allowing for better portability. This has the added advantage that artists and production studios all over the world can work on the same project 24x7, without worrying about compatibility and bandwidth issues.

**Virtual Production and Avatar!**

Now this is a very interesting concept. As you know, movies and games, in fact, a scene of any sort, starts off as a storyboard. The director works with an artist and sketches out a scene in the same way you would create a comic strip. This allows the director to visualise, in a very rudimentary fashion, what the scene would look like. Autodesk has taken this to the next level using Virtual Production.

You can now generate a virtual storyboard and even view a CG scene in real-time, while the characters are enacting it. James Cameron did this in *Avatar*, by setting up his tablet as a virtual camera. His tablet was tracked by the software (using motion capture), and its position and orientation was interpreted as a camera within the software. At the same time, the 3D scene being rendered was streamed to the tablet as a video. This allowed him to walk around the set and observe elements as they would be seen in the movie (the blue screen would be replaced by the actual environment of the scene), enabling him to direct the actors in real-time in the context of the animated environment.

Autodesk recently signed an agreement with Walt Disney for a tech called "X-gen", developed by Walt Disney's top secret development division. The technology allows artists to procedurally insert various items and effects into a scene. A good example would be *Tangled*, where the character's hair was rendered by this method. Even the *Pirates of the Caribbean*, where Davy Jones's tentacles underwent the same treatment.

**Social/Casual gaming and Autodesk**

Everybody plays games now. The gaming demographic has gone from the 14-19 years of yore to the current small kid-to-grandma stage. Autodesk realises that and has decided to take a very close look at social and casual games. While it really doesn't have a suite or application specifically designed for this genre, it's working on it and hope to have one ready in the near future.

**Parting thoughts**

Autodesk has always been looked on as the company that made the software for developing things like in-game assets and effects such as weapon models and muzzle flashes. Now however, Autodesk wants to improve on the middle-ware it provides and has been working on various pieces of software such as Kynapse and HumanIK as an AI and Inverse Kinematics system for use in animation and games. **d**

As told to **Anirudh Regidi**  
anirudh.regidi@thinkdigit.com



**Smart TVs have been around for a while. But are they really worth it? Agent001 takes a look**

Agent 001

agent001@thinkdigit.com

**T**hanks to CES, the term “Smart TV” is being heard quite often these days. Jayesh was lucky enough to actually play around with a couple of the smart TVs including LG’s 55-inch OLED TV supporting Google TV software, in Las Vegas. He was telling me about how some TVs such as the LG 55-incher and Lenovo Smart TV were based on a customised version of Android 4.0 aka Ice Cream Sandwich. Infact, the Lenovo TV even had a separate gaming pad to go with it.

Smart TV, to put it simply, is a TV system that lets you connect to the internet thanks to the circuitry within it which can accommodate network connectivity. It should also enable interaction with devices such as digital cameras, tablets, etc if they support the proprietary / DLNA standards such as AllShare for Samsung devices.

Last year, four major companies started selling smart TVs, namely Samsung, LG, Panasonic and Sony but that number has definitely increased this year and you’re bound to see a boom in this category across brands.

Samsung has smart TVs starting at around ₹48,000 for a 32-inch model (UA32D5900VR) going all the way to a whopping ₹4,00,000 for a 60-inch model (UA60D8000YR). There are many price points and sizes in between. A higher end model, Samsung UA46D5500 also offers 3D TV functionality. It’s an LED backlit LCD TV priced at ₹89,900 and it connects to the net via Samsung Apps. If you want a web browser and Skype as well, then you’ll have to go for an even higher end model.

The implementation of the Samsung Hub is quite decent, with the live TV going in a picture-in-picture mode while you browse other features. The Search All feature is impressive and it can search not only your TV and web, but also your online subscription services, connected devices via USB or HDMI or AllShare protocol.

The LG smart TV range has limited models and the maximum screen size available is 47 inches, and naturally its pricing is under a lakh but if you want to go for a Cinema 3D based smart TV, then be prepared to shell out in excess of a lakh. LG has a



clean layout and its main advantage is the motion sensing remote control. It kind of acts like an air mouse but the response wasn’t that great. It has tied up with Indian digital properties such as NDTV, Zapak, etc., which makes the content quite relevant to the Indian market.

Panasonic, on the other hand, has smart TVs with Plasma panels or LED backlit LCD panels. Its app ecosystem, Panasonic Viera Connect is neatly laid out based on categories. The Social TV feature allows you to chat in a sidebar while your TV screen gets compressed.

Sony’s Bravia line-up including series such as XBR-HX929, HX820, NX720 support Bravia Internet Video

with a built-in Wi-Fi module which can come handy while streaming. Bravia smart TVs have a very limited choice as far as apps are concerned.

So those were the four most prominent bands found at most of the malls I visited. Before getting a smart TV keep in mind the following four pointers:

- 1) Make sure you have a broadband connection else don’t think of getting a smart TV. You surely don’t want to just browse Twitter, Facebook, etc. You’ll want to watch streaming video content on your TV and make video calls on Skype and you don’t want buffering.
- 2) You might want to invest in a QWERTY remote as typing words using the standard remote control is a big pain. Sure you can get apps on your smart-phone for controlling the TV, but a QWERTY remote is a better option.
- 3) Do have a look at the apps offered and give more importance to those TVs offering India-specific content. You don’t want a TV with only apps such as Pandora, Netflix, Hulu etc, which won’t work in India, at least for now.
- 4) Don’t expect to get a demo of the online facilities at a mall. I tried out two malls and none of them had the provision to connect the TVs to the net.

With Google platform making an in-road into a lot of TVs – as Jayesh, who witnessed it all at CES (see “CES Special”, Page 12) explained – it makes sense to wait for the next gen smart TVs to enter the market. But if you really want a smart TV now, go ahead and get one keeping in mind the pointers above. Ideally, your new TV should have software upgrades to give you the latest apps, UIs and features. It’s a safe bet. ■





### Graphic card to support latest games

I've just bought *Battlefield 3* as I thought it would be a cool game. The only problem is that the graphic card on my Dell Inspiron 560 doesn't support it.

My PC configuration is as follows:

- **Processor:** Intel Pentium Dual Core CPU E8500 @ 3.20 Ghz
- **Operating system:** Windows 7 Home Premium 64 Bit Service Pack 1
- **Chipset:** Intel G43/G45

In addition to *Battlefield 3*, I also want to be able to play all other latest games such as *The Elder Scrolls – Skyrim*.

My budget is ₹4000-5500.

Animesh Anand

Considering your budget we suggest going for the Radeon HD 6670 graphics card. It gives a score of around 30 FPS for *Battlefield 3* at 1080p and you may even get higher scores at lower resolutions. Even *Skyrim* is quite playable but you may not want to scale up the AA and AF settings too much. The MSI R6670 MD1GD5 card retails for around ₹5400 while Sapphire HD 6670 is for around ₹5910.

### Quick PC assembly for a 16-year-old

I'm a 16-year-old, with a budget of ₹45,000-50,000. I want my PC specially for gaming use. I've decided just two things which will be included in my PC as mentioned below:

**Monitor:** Dell UltraSharp U2311H (suggest if any better)

**Processor:** Intel i7 2600k (I think this is the best for gaming. Suggest if any better.)

Vandit Patel

Ideally, it's best if you waited a bit before purchasing your PC because:

- Nvidia and AMD are launching their latest graphics cards.
- Hard disk prices have more than doubled and are rumoured to come down a bit in the next three months or so.

However, despite all that, if you really need to buy a new PC now, consider the following: The monitor that you've selected is a very good monitor but it has a response time of 8 ms, which is less than ideal for gaming. A better monitor would be the Samsung P2350, which has a response time of 2 ms.

We recommend the following configuration for your budget:

- **Processor:** Intel Core i5 2320 (₹9300)
- **Motherboard:** MSI-H67 MA-E35 (₹4700)
- **RAM:** 2x4GB G-Skill RIPJAWS 12800C9 (₹2500)
- **HDD:** Seagate 1TB HDD (₹5800)
- **Monitor:** Samsung P2350 (₹10,800)
- **Graphics Card:** Galaxy GTX 560 (₹10,300)
- **Cabinet:** CM Elite 430 (₹2620)

- **PSU:** Corsair GS 600 (₹4000)
- **Total:** About ₹50,000

### Camera with good optical zoom

I'm planning to buy a camera with good optical zoom and performance. I've short-listed Canon SX130is and Nikon L120. Which among these two gives better picture quality and good overall performance?

My budget is ₹13,000/-. If there's another option besides these two, please let me know.

Sagar S Mahajan



The Canon SX130IS is a slightly older model. Nikon L120 has a 21x optical zoom, but doesn't have many manual controls. So if you're okay with using just the Auto and Program modes but want great optical zoom, the L120 at ₹13,950 (MRP) makes for a good buy.

However, if you want better image quality and more manual control, then the Canon PowerShot SX220HS makes for a good buy. Performance-wise, it's much better than the L120; plus the SX220HS has around 14x optical zoom and it comes in a compact form factor. It gives much better low light performance. It's priced slightly higher at ₹15,995 (MRP) so in the market you may get it around ₹14,000.



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# SPEND SMART

Updated prices of top cabinets, monitors, DSLRs, all-in-ones and hard drives from Digit Test Labs



## DIGIT BEST BUY WINNERS

| Product                 | Specifications          |                                 |                    |                           | Price  |
|-------------------------|-------------------------|---------------------------------|--------------------|---------------------------|--------|
| Reliance 3G tab         | ARM11 800MHz            | 512MB RAM                       | Android 2.3.4      | 7-inch screen             | 13,995 |
| Canon PowerShot SX230HS | 12.1MP CMOS sensor      | 14x optical zoom                | IS (Lens-shift)    | 1080p video recording     | 17,495 |
| Cooler Master HAF 922   | 2 / 5 Fan (140)         | 13-inch Graphics card supported | Bottom mounted PSU | Excellent airflow         | 6,800  |
| Logitech G510           | 18x3 programmable keys  | In-built LCD                    | 5KRO               | Integrated volume control | 5,500  |
| Logitech G9x            | 7 button + scroll mouse | Adjustable weights              | 5700dpi sensor     | Exchangeable body         | 5500   |



## CABINETS

| Product              | Bundled fans / Supported | Max. graphics card length (in inches) | PSU Mounting | Misc                            | Price  |
|----------------------|--------------------------|---------------------------------------|--------------|---------------------------------|--------|
| Corsair Carbide 400R | 3 / 10                   | 12.45                                 | Bottom       | Storage area on the top surface | 5,000  |
| NZXT Phantom         | 3 / 7                    | 13.8                                  | Bottom       | Dust filters for all vents      | 7,000  |
| Thermaltake DOKKER   | 1 / 7                    | 12.5                                  | Bottom       | In-built HDD dock               | 4,000  |
| Cooler Master 690 II | 2 / 10                   | 12                                    | Bottom       | GPU Retention bracket for SLI   | 5,200  |
| Lian-Li A70F         | 4 / 4                    | 15.35                                 | Bottom       | Ridiculously large build        | 15,000 |



## M\$ out, US\$ in

Microsoft has decided to discontinue its Microsoft Points system in favour of real cash  
<http://bit.ly/yONkHR>

## On the cheap

Sony slashed its PSP 3000 prices from ₹10,000 to ₹6500. Grab it while stocks last  
<http://bit.ly/dEsoIN>

Price watch

# SPEAKERS



| Product                | Power (W in RMS) | Frequency response (Hz) | No. of channels | Price  |
|------------------------|------------------|-------------------------|-----------------|--------|
| Logitech Z130          | 5                | NA                      | 2.0             | 1,025  |
| Altec Lansing MX6021   | 200              | 70-20000                | 2.1             | 9,000  |
| Creative Inspire T6200 | 76               | 35-20000                | 5.1             | 4,400  |
| Altec Lansing VS2621   | 28               | 200-20000               | 2.1             | 2,400  |
| Audiengine A2          | 60               | 65-22000                | 2.0             | 10,000 |



# WIRELESS ROUTERS

| Product                           | Wi-Fi standards (upto) | LAN Ports   | Warranty (year) | Price |
|-----------------------------------|------------------------|-------------|-----------------|-------|
| Linksys E1000 Wireless-N Router   | 802.11n                | 5           | 1               | 2,600 |
| TP-Link TL-WR841N                 | 802.11n                | 5           | 1               | 1,800 |
| D-link DWA-131 N Nano USB Adapter | 802.11n                | NA          | 1               | 1,000 |
| Asus RT-N10LX                     | 802.11n (150mbps only) | 5           | 1               | 1,300 |
| Asus RT-N56U Dual Band Wireless-N | 802.11n (dual band)    | 5+ 2xUSB2.0 | 1               | 9,000 |

# GAMES



| Games                      | Platform | ESRB Rating | Online Service | Price |
|----------------------------|----------|-------------|----------------|-------|
| Twisted Metal              | PS3      | Mature      | PSN            | 2,200 |
| Modern Warfare 3           | PC       | Mature      | Steam          | 2,500 |
| Battlefield: Bad Company 2 | PC       | Mature      | Origin         | 400   |
| Battlefield 3              | PC       | Mature      | Origin         | 1,300 |
| Batman: Arkham City        | PC       | Teen        | Steam          | 840   |
| Elder Scrolls: Skyrim      | PC       | Mature      | Steam          | 2,200 |
| Max Payne 3                | XBox360  | Mature      | XBox Live      | 2,700 |



## Ubuntu One Files on iPhone

Ubuntu users rejoice as Canonical has released an app which enables Ubuntu users to access their files on the Ubuntu cloud <http://bit.ly/zYgtzU>

## USB 3.0 on tablets and phones

USB 3.0 to get a slimmer form factor enabling adoption tablets and phones <http://bit.ly/y8da46>

# How companies rip you off

When paying for one component and getting another “free” turns traumatic

Kapil Rustagi

[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

Samar bought a branded notebook with an extended three-year warranty. He was satisfied with it until it randomly started giving mild electric shocks during charging. One day, while working he dropped it due to such a shock, which resulted in a crack in the top layer of the front LCD and a dent around the keyboard. When the product was taken to the service centre, he was told that the electric shocks were due to the faulty earthing in old wirings of Indian homes. When Samar claimed warranty for repairs, he was denied benefits and instead told to pay almost half the price of a new device just for the broken glass.

It's not new to hear about companies charging exorbitant prices to replace spare parts. At times, these parts are not even essential, yet they're overpriced.

For example, in Samar's notebook it wasn't even the motherboard or main LCD itself but a plain glass covering for which the company had quoted the unrealistic price. The company justified its stand saying that it would change the entire LCD; but why should it? The consumer is being forced to pay for parts that are not even damaged.

Interestingly, Samar found out that the same company was only changing and charging for the glass panel in the American market. Why this discriminatory practice in the Indian market? Over-pricing of products and services without any reasonable basis amounts to “abuse of dominant position” which is actionable under the Competition Law. Complaints can be filed before the Competition Commission of India situated at New Delhi.

The company may directly and indirectly impose unfair and discriminatory conditions during the sale of products and services, which need to be identified. In fact, in certain situations there's no competition left and it virtually amounts to monopoly, prejudice to the interests of consumers. For example, a particular technology needed to repair or manufacture a product may only be available with a particular company. If its act limits your options, you can complain against it to the Competition Commission which in turn can initiate an inquiry under the provisions of the Competition Act. Acquainting yourself to companies' practices helps avoid being caught offguard. ■



### We can help!

If you're facing a problem with your purchase, write to us at [help@consumermate.com](mailto:help@consumermate.com)

## COMPLAINTS RECEIVED

### LAPTOPS

#### Service centre isn't responding to queries about my faulty laptop

I bought a Acer Aspire 4820TG whose fan module blade, I later found out, was broken. The service centre subsequently changed it. However, it isn't working properly even after replacing the motherboard and fan module. The service centre asked to call them in case of any problem, instead of calling customer care. But when they didn't respond or visit, I called CC and asked to speak to a senior person. After calling 3-4 times he said that he couldn't solve my problem and asked me to mail my issue at [acer.cc@intarvo.com](mailto:acer.cc@intarvo.com). After a bit of googling, I also left a mail at [ailintouch@acer.co.in](mailto:ailintouch@acer.co.in) but no one responded.

Another thing is that the service centre uses cheap thermal paste. If we're getting cheap service from this service centre,

why should we prefer their service? I would have gone to some local shop and asked them use good thermal paste. At least I would know that I'm getting good quality service.

Now I'm awaiting a response. In case this doesn't work out, I plan to file a case in consumer court.

I've had enough of this mental torture and waste of time. I just want to get my whole money refunded because I simply don't want to be the customer of a company that doesn't have proper quality check or customer support. Please help me get a refund.

**Contacted By:** Vikas Sharma

#### Answer By Consumermate:

Dear Consumer,  
It's good that you're aware of your consumer rights. Product replacement or money refund isn't easy in the first

instance unless the product is proved to be inherently defective. Please give them the product for repair once with strict instructions. Before you lodge a complaint, write a letter to them in the shape of a legal demand notice detailing all your problems. Mention all relevant details of earlier job sheets, if you have any. In case, they don't come up with a solution then you may go ahead with your complaint in the district consumer forum. There's a chance that the company would resolve the problem at the stage of notice itself. I hope the company would realise the consumer needs and do the needful to provide proper consumer services so as to maintain its reputation in the market. Please keep a proper record of all the relevant documents; this would be crucial in establishing your claim in the consumer forum. You can file a consumer complaint in the district forum. ■





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■ Basic rig = ₹19,965

■ HTPC = ₹23,700

■ Entry-level Gaming = ₹36,465

■ Mid-range Gaming = ₹56,430

■ Ultra high-end = ₹1,66,920

## BASIC RIG

|               |                                      |               |
|---------------|--------------------------------------|---------------|
| Processor     | AMD Athlon II X2 260                 | 3,300         |
| Motherboard   | GIGABYTE GA-MA78LMT-S2               | 2,600         |
| RAM           | Corsair Desktop RAM 2GB DDR3 1333MHz | 700           |
| HDD           | Seagate 500GB 7200.12                | 4,400         |
| Monitor       | BenQ G610HDAL                        | 3,900         |
| Graphics Card | None                                 | 0             |
| Cabinet       | Cooler Master Elite 310              | 1,900         |
| PSU           | VIP 350W                             | 800           |
| Speaker       | Altec Classic Audio BXR1221          | 1,000         |
| Mouse         | Zebronics Judwaa 5 (Bundle)          | 0             |
| Optical Drive | LG 22x SATA DVD Writer               | 900           |
| Keyboard      | Zebronics Judwaa 5 (Bundle)          | 465           |
| Sound Card    | None                                 | 0             |
| <b>Total</b>  |                                      | <b>19,965</b> |

## HTPC

|               |                                   |               |
|---------------|-----------------------------------|---------------|
| Processor     | Bundled                           | 0             |
| Motherboard   | MSI E350IA-E45                    | 8,500         |
| RAM           | Corsair 2GB DDR3 1333MHz          | 700           |
| HDD           | Seagate Barracuda 2 TB            | 8,800         |
| Monitor       | None (your TV)                    | 0             |
| Graphics Card | None (HD6310 onboard)             | 0             |
| Cabinet       | Zebronics Tambi                   | 2,000         |
| PSU           | Bundled (150W)                    | 0             |
| Speaker       | None                              | 0             |
| Mouse         | MS Wireless Laser Combo XVA-00020 | 2,750         |
| Keyboard      | Bundled                           | 0             |
| Optical Drive | LG 22x SATA DVD Writer            | 950           |
| Sound Card    | None                              | 0             |
| <b>Total</b>  |                                   | <b>23,700</b> |

## ENTRY-LEVEL GAMING

|               |                                    |               |
|---------------|------------------------------------|---------------|
| Processor     | AMD Phenom II X4 840               | 5,500         |
| Motherboard   | GIGABYTE GA-MA78LMT-S2             | 2,600         |
| RAM           | Corsair XMS3 DDR3 1333 MHz (2x2GB) | 1,400         |
| HDD           | Seagate 500GB 7200.12              | 4,400         |
| Monitor       | BenQ G2222HD                       | 7,000         |
| Graphics Card | Asus GTX550Ti                      | 8,300         |
| Cabinet       | Cooler Master Elite 310            | 1,500         |
| PSU           | Corsair CX430                      | 2,400         |
| Speaker       | Altec Lansing V2621                | 2,000         |
| Mouse         | Zebronics Judwaa 5 (Bundle)        | 0             |
| Optical Drive | LG 22x SATA DVD Writer             | 900           |
| Keyboard      | Zebronics Judwaa 5 (Bundle)        | 465           |
| Sound Card    | None                               | 0             |
| <b>Total</b>  |                                    | <b>36,465</b> |

## MID-RANGE GAMING

|               |                                      |               |
|---------------|--------------------------------------|---------------|
| Processor     | Intel Core i5-2400                   | 11,100        |
| Motherboard   | MSI-H67 MA-E35                       | 4,700         |
| RAM           | Corsair 2x2GB DDR3 CMX4GX-3M2A1600C9 | 1,900         |
| HDD           | Seagate 500GB 7200.12                | 4,400         |
| Monitor       | Samsung P2350                        | 10,800        |
| Graphics Card | ASUS GTX560                          | 11,300        |
| Cabinet       | Cooler Master Elite 430              | 2,620         |
| PSU           | Corsair GS 600                       | 4,000         |
| Speaker       | Altec Lansing V2621                  | 1,960         |
| Mouse         | Razer Abyssus (bundled)              | 0             |
| Optical Drive | LG 22x SATA DVD Writer               | 950           |
| Keyboard      | Razer Cyclosa (Bundled)              | 2,700         |
| Sound Card    | None                                 | 0             |
| <b>Total</b>  |                                      | <b>56,430</b> |

## ULTRA HIGH-END

|               |                                        |                 |
|---------------|----------------------------------------|-----------------|
| Processor     | Intel Core i7-2600K                    | 17,500          |
| Motherboard   | ASUS Maximus IV Extreme Z              | 26,220          |
| RAM           | G.Skill Ripjaws 8GBXL (2x4GB)          | 2,600           |
| HDD           | 2x Seagate 1 TB + Kingston HyperX 64GB | 21,000          |
| Monitor       | BenQ XL2410T                           | 25,000          |
| Graphics Card | EVGA GTX580                            | 29,000          |
| Cabinet       | Cooler Master HAF922                   | 7,700           |
| PSU           | Seasonic X850 (80+ Gold)               | 10,000          |
| Speaker       | Logitech Z506                          | 6,700           |
| Mouse         | Logitech G9x                           | 5,000           |
| Optical Drive | LG 12x Blu-ray OEM RW                  | 6,500           |
| Keyboard      | Logitech G510                          | 5,000           |
| Sound Card    | ASUS Xonar DX 7.1                      | 4,700           |
| <b>Total</b>  |                                        | <b>1,66,920</b> |

## OPTIONAL ACCESSORIES

|                 |                                   |        |
|-----------------|-----------------------------------|--------|
| Speakers        | Logitech Z5500                    | 18,500 |
| Controller      | Xbox Controller                   | 1,400  |
| Controller      | Logitech G25 Racing Wheel         | 17,000 |
| Webcam          | Microsoft LifeCam HD              | 2,000  |
| Headset         | Razer Carchiaras                  | 3,700  |
| System Fans     | Noctua NF-P12-1300 120mm Case Fan | 950    |
| System Fans     | Noctua NF-P14 FLX 140mm Case Fan  | 1,050  |
| Sound Card      | ASUS Xonar Essence                | 9,000  |
| USB Hub         | Belkin 7 port USB HUB             | 1,000  |
| Wireless Router | Belkin surf router (n)            | 2,200  |
| CPU Cooler      | Noctua NH-D14                     | 5,500  |
| CPU Cooler      | Coolermaster Hyper 212 plus       | 1,900  |
| Thermal Paste   | Arctic Cooling MX2                | 500    |



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# YOUR 10 POINT CHEATSHEET TO ESOTERIC GEEKDOM

The term Tech Culture, or Geek Culture, sounds like an abstraction doesn't it? Something that's all-parading, all around you; you can feel it, breath it but can't quite place your finger on it. If you find your eyebrow arched in a mental "huh?", don't worry it went pretty "meta" on us too. Hence in a bout of pedagogic inquisitiveness we went about trying to find out what these terms meant and how one could start defining them.

Siddharth Parwatay  
[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)



The term "technology" in the industrial era meant systems of machinery for production.

In today's post-modern world, technology means something much more. Today it's an all-encompassing system that we actually live within. We're its cogs. Technology transformed from a mere construct of culture to a culture in itself. At the forefront of this culture were geeks, who took to it very naturally. The technocrats of yesteryear became the geeks of today. The two are so closely linked that almost all of geek culture is fully entrenched in its larger set. Hence Geekdom is not just about being into niche technology, it's more of an approach towards things. It's a way of life.

As you go through our list of contemporary cultures you'll find out that it's not simply about what's being consumed that's important, the way that it's consumed is essentially the way of the geek. It's all about being "into" something. You could be into obscure and humour-based coding or fanatically absorbing every bit of information that is released about the second season of *Game of Thrones*, it's all still "geek culture". While navigating the endless mundane wastelands of everyday life you become part of something smaller, something niche and special. You belong to a community of like-minded individuals with their own set of arcane rituals, customs and beliefs. In the rat race you can revel in the knowledge of this group, share a nod of quiet acknowledgement with a fellow geek and be aware of that collective consciousness.

Of course, trying to capture the true essence of any culture is like trying to trap lightning in a bottle; impossible, yes, but we'll surely try to give you a headstart. Geekdom though seemingly impenetrable is in reality fairly inclusive. After all, as Mahatma Gandhi once said "No culture can live, if it attempts to be exclusive."

## The creativity clique

Current technology offers various ways through which your creativity can be recognised and rewarded. The theory is simple: make something interesting and chances are it'll get shared

setting off the great viral machine that is the internet. It could be digital art that thrives in pockets such as deviantart.com, creative photography with its own circles (flickr, 500px, Instagram, photo.net and other photo blogs), music composition at SoundCloud or simply creative content on a YouTube channel. Other avenues of geekier creative expression include Pixel Art, a digital art form in which images are painstakingly created at the pixel level, and Mario Paint Composer, a tool that lets you create music using sounds from *Mario*. It's quite astonishing what people are able to create in these forms. (links in bit.ly bundle at the end of this section)

But on any platform there's bound to be competition and there will be a set of norms and rules that the culture follows. Let's look at YouTube, specifically since it's been getting the most attention of late and much of what you create can be "video'ed" and shared on YouTube. Recent statistics reveal that eight years worth of video gets uploaded to YouTube every day. It's obvious you need to stand out. Humour, shock value and vulgar displays of talent are some of the ingredients that cause things to go viral in this culture.



What makes stuff go viral?

What was it with Kolaveri Di then? Sure it's a catchy tune but it's not like there haven't been catchy jingles or self-deprecating South Indian humour before. Maybe the cute girl in the video helped? Yet the key to complete immersion into this culture is consistency. Not meteoric

flash-in-the-pan success. To be a

YouTuber a.k.a a part of YouTube's Partner programme you'll need a successful stream of content rather than just one video. And what do you get? Some estimates suggest that a content partner with 100,000 plus subscribers gets upwards of \$25,000 a year. In the west about 20,000 successful partners have

been brought on board by YouTube which includes biggies such as *nigabiga* and *rwj* to even relatively niche early birds such as *labnol* who rode the success wave. In fact most of these big names have moved from creating videos in basements with webcams to slick production values thanks to Maker Studios, an outfit that has acquired several of these budding YouTubers.

So what's the scene like in our homeland? Content from India that's currently uploaded on YouTube and gets decent number of views is limited to ironic clips of Bhojpuri videos or howlers from news channels. It's mostly unoriginal content. But as any development in the west has a tendency to trickle down to our shores eventually, so will this culture of creating methodically viral content. What we're trying to say is that it won't be long before an Indian *lonelygirl15* bores you to death or a *raju william johnson* captivates millions. In fact, recently YouTube launched the Indian arm of the partner programme. They've got on board YouTuber's such as Shradha Sharma a.k.a a shradharockin, a small town girl who uploads videos of her crooning to her guitar. Others include jayhindtv, a late show format online comedy show that's often profane and satirical. So what's their secret sauce and what could be yours? Creativity, consistency and identifying a niche audience. So go ahead make something and join in the culture of creativity. Here's a link bundle to get you started <<http://bit.ly/cultcreate>>

## Share it louder

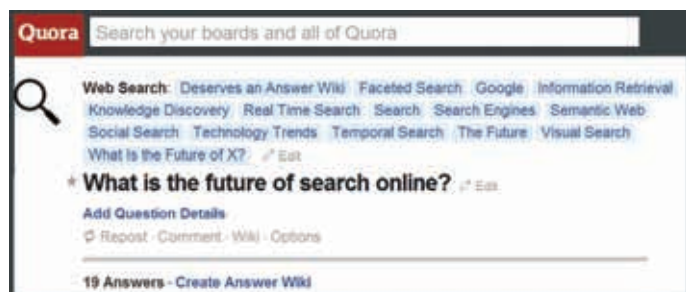
By sharing we don't mean tons of data over P2P and Torrents. That's borderline illegal! And we're pretty sure most of you are already into that culture. What we're talking about here is knowledge sharing. There are several avenues through which communities share knowledge — open-source code, crowdsourced repertoires such as Wikipedia, the user-generated compendium of contemporary language Urban Dictionary and many more.

However, some of you might wonder "if knowledge is power why would I want to share it and lose a bit of that power?". This is indeed a paradox and there are many cultural reasons as to why people engage in this seemingly altruistic behaviour. Ranging from approval and a



sense of belonging to a simple ego boost, the benefits are many. It's the same kind of desire that prompts people to share an interesting article or a funny video. We don't have any compunctions to stake a small claim (of discovery) over that content, so why won't we share our own original thought? Besides, geeks are smart and though not necessarily show-offs we like to be right, right? What better way than to unleash your knowledge online and be the guiding light to the hordes?

Now that you're probably convinced about the idea there might be another argument cropping up. "I don't have any knowledge to share!" you might cry. The truth is that as we go through life, the sum total of our existence definitely teaches each and every one of us a thing or two. On communities such as Quora, people can share their knowledge on any topic. From life lessons to astrophysics and everything in between. The site operates on a question-answer basis, and being initially invite only and completely non-anonymous keeps it from becoming another Yahoo! Answers. Even a question like "Did Celtic warriors ride into battle on bears?", gets well researched answers



Ask, answer, learn or simply browse - a knowledge junkie's dream.

and comments that explore the question's hidden connotations. Sites such as Squidoo and askville about all thrive on user contributed knowledge. Even wiseGEEK which is professionally curated, refines much of its content by way of comments left by enthusiastic geeks.

Last but not the least, let's not forget the ultimate destination of the knowledge junkie, that culture of cultures, the good old guardian of the old internet forums! Geeks with an unimaginably niche expertise descend on web forums that are equally niche. Take TDF for instance; there are few sources on the web that can give you better knowledge about your tech queries. Forums exist for all

sorts of subjects, ranging from photography to UFO sightings and more. <http://bit.ly/cultknow>

## May I have your attention please

No matter how much anyone denies it, it's human nature to want attention. The amount and kind of attention one wants however differs from people to people. For instance, some, err, attention seekers on social networks are experts at photography and Photoshop effects (proof: image alongside). But geeks look for attention of a different kind. It's a bit of a higher pursuit, leaning towards intellectual appreciation rather than likes for putting up emotional quotes or pictures of puppies. So how do you go about acquiring fame, recognition and, in some cases notoriety online? Heck, there are several ways. The goal is to inspire reaction, and hence get attention.

The trend of late has been to start fake Twitter accounts or Twitter accounts that are self-confessed fake accounts of celebrities. Some of the more famous ones in India are @fakeiplplayer, @SatanBhagat, @jhunjhunwala, etc. Whether to go this

way is a question of choice of course. Humour is also important; after all who doesn't want a good laugh. Witty Twitterisms or Twitter wittisims are the currency of the day. Parodying pop culture seems to always work too.

There's fakingnews, flyyoufools, <http://onionnuttapam.com> and others. However if you want to go the serious route, start a blog or Twitter account and keep your posts consistently on a particular topic. You could eventually get recognition as an expert on a particular subject. Geeks, by nature, like to delve into a particular subject thoroughly. You could be an expert on GPUs, camera gear, or even hacking. Pretty soon you'll have a dedicated following.

## Do it yourself

Perhaps the most common trait amongst geeks is that insatiable curiosity to discover new stuff. This includes finding out how everyday things around us



There's a difference between seeking attention, and being an exhibitionist

work. Many toys, and later gadgets such as phones, radios and TVs have faced their untimely demise at the hands of little geeks who tore them apart to find out what makes them tick. Chips, glue, malformed soldered alloy may look grotesque to people, compared to a gadget's sleek external body, but to a geek these things are the soul of the gadget. Individuals inclined to such pursuits move from tearing down stuff to actually building things and hence become part of the thriving DIY culture. DIYs gives practitioners a sense of achievement that comes from creating something tangible, that works and solves a problem. The culture spans not just electronic gadgets but also things like household fixes, appliances fixing etc. Some consider the culture to also include making changes to Open source software to suit their own needs. DIY is all about taking charge of technology around you and coming up with solutions. "I had this old laptop whose battery had failed and was on the brink of total shutdown. I didn't have much to lose if I couldn't put it back together again so I decided to open it up just to understand how it works. Pretty soon I was fixing





chip-level problems for my friends", says Rahul Mehra. Rahul then moved on to opening up and fixing discarded CRT monitors and is now known as "The Fixer" in his circles. So do you have to be technically qualified? Not really. There are enough resources available online to get anyone started. There are even kits to help amateurs get started. DIY portable amplifier kits such as CMoy or Mini3 are very popular in audiophile circles, for instance. Web sites such as [ifixit.com](http://ifixit.com) put up well-documented repair guides and beautiful high-res photographs of gadgets that they tear down. Gawking at naked beauties has never been so SFW. The latest wave of console hacking (some of which we've covered in past issues) is just another form of the DIY culture. Follow the link to learn more. <<http://bit.ly/cultldiy>>

## Hacktivism

When the freedom of the internet is under threat, there rises a breed of socially conscious hackers who stand up to protect the rights of the free world. These are geeks with a cause and the necessary skills to retaliate against tyrannical powers that be who seek to limit the freedom of ordinary netizens. They're white-hat hackers, with noble intentions of social change but their actions are certainly illegal. These



Anonymous. Who are they?

include web site defacements, redirects, denial-of-service (DDoS) attacks and other's mischief. In recent times Anonymous, who normally are interested in their daily Lulz, launched a series of DDoS attacks on US government web sites in protest of SOPA. Now this isn't a sub-culture we necessarily condone, but what we're trying to say is that geeks are socially aware, take up causes and make their voices heard in the face of injustice.

Apart from these misunderstood miscreants, much of the tech world turned hacktivists in their own ways. Apart from biggies such as Wikipedia and Google,

many blogs posted anti-SOPA messages of their own and the geek universe galvanised united towards a common cause. Such is the power of hacktivism.

## From the shadows to the forefront

The other side of pontificating online (read sharing knowledge) is lurking around in cyberspace. Lurking is basically visiting online message boards, forums, and other virtual setups like chat rooms and IRC channels and simply reading without posting anything of your own. In the dictionary sense, lurking has a negative meaning alluding to lying in wait with an intent to ambush. Online lurking doesn't necessarily have a negative connotation. Unless of course you consider the new breed of social networking lurking, but for that you have another word, stalking.

Lurking as a culture is a proactive choice or, at times, a necessity. It's a necessity when newbies try to break into a community and seem out of place. Hence it's often advised that new entrants into any culture lurk for a while, get familiar with the culture, the specific lingo, nuances and then begin to contribute. Being reticent is better than posting nonsense after all. Lurking in forums is common but a newer type of lurking that's emerging is on article comment threads and even YouTube videos. Lurkers often spend as much time on YouTube comments as watching the actual videos. By doing this they get exposed to the brand of humour prevalent on YouTube's community. Ironical comments such as "I'm in the weird part of YouTube again" or "How did I get here" or "I get no thumbs ups" usually get a lot of likes.

So what are the advantages of lurking? Knowledge is one, and since you've spent time understanding a community, you get better acceptance once you start posting. Another advantage is the lingo and jargon you come across. Lots of people who seem witty online have only just regurgitated something that they've come across in their endless lurking. But hey, if it works for newer platforms such as Twitter, then, why not! You get an instant rise in the social pecking order and follower counts. Places such as Twitter don't follow the one per cent rule very strictly. The rule (and it applies to forums) states that only one percent of people actually

create content, nine percent contribute to that content and the majority lurk. On Twitter and other social media, content is created by a much larger percentage of users. It may not necessarily be read but it still adds to the competition. So go ahead lurk, gain expertise and then come out with all guns blazing.

## Start-up culture

It goes without saying that geeks have always been at the forefront of the start-up culture. Whether it's billion dollar companies in Silicon Valley or even web services based out of Bangalore, start-ups is now a culture amongst entrepreneurial geeks. For the uninitiated, a start-up is a high growth, low capital and technology oriented venture. Start-ups can be web services, software companies or just about anything. Since start-ups are usually associated with technology, geeks are the ones establishing themselves in this culture. After all, looking at the success of role models (and fellow geeks) such as Steve Jobs, Bill Gates and Mark Zuckerberg, who wouldn't want to put up a start-up of their own? The risks are many and success rate is very low but the rewards are high. Since innovation is a fundamental paradigm of this culture, you need to be of that bent of mind. If you like improving things and understand underlying technologies well, perhaps you should give this culture a shot. If it's a web start-up you have in mind, the investment is also not very large. For funding as well there are several business plan competitions happening at the college level. At the time of scaling up, there are many resources (even in India) such as VCs, Incubators etc. which will come of use if your product has potential. Stay in the loop, collaborate with other geeks and maybe you could be the next big thing. Head over to <<http://bit.ly/cultstartup>> to get started.

## Memes

A meme can be loosely defined as anything that catches the fancy of netizens for some unknown reason and gets

shared all over the web like wild fire. Even someone who's not very entrenched in this culture would have surely come across some memes. Lolcats is a perfect example. After that first fateful image appeared on [icanhazcheezburger.com](http://icanhazcheezburger.com), it almost seems like kittens have taken over the internet. There've been images, comics, an entire grammatically absurd language, videos and lots of other content produced to the theme of lolcats.

There's no stopping the phenomenon! Memes crop up everyday at places like 4chan which then get regurgitated on to reddit and then onward to curating web sites such as funnyjunk and 9gag. To be into this culture is to literally be in touch with the pulse of the internet. Text from memes gathers meaning and weight as it passes along from one user to another. Such text can be used in context and you'll need to be into the culture to understand it fully. Take the following conversation into the picture:

**Dude:** Irrc this one web site I came across derps a lot, check this out: <http://derp.org/derpi>

**Troll:** glorious exposition comrade <img> . tldr.

There are at least two memes and lots of l337 speak. Head over to <<http://bit.ly/cultmeme>>

### Tech fitness culture

Managing one's health using the latest apps and day-to-day gadgetry



LOLCATS, taking over the world one cat at a time

is becoming a big culture in the west. Yuppy geeks all over the world are enthusiastically using their phones and accessories to track, examine, monitor and prevent problems and improve their health. According to MobiHealthNews, Apple's App store alone offers over 9000 mobile health apps and these are expected to grow substantially. Similarly there are countless other apps available on the Android market too. Such apps spans a wide breadth of areas including cardio fitness apps, apps that help you stick to a diet, cope with stress, give up smoking and regulate your lifestyle.

It's not just apps that will drive this culture though. Already there are accessories (basically sensors) such as the recently released Jawbone UP that are entering the fray. The UP is a wristband accessory that syncs with an iPhone app and tracks vital health stats of the wearer such as motion, sleep patterns and eating habits. The band vibrates to remind users of inactivity and other important tracking parameters. There's also a social angle to the app, whereby users can compete against others. There are leaderboards, unlockable achievements and rewards. Digifit is another sensor accessories provider with a slightly specialised offering for runners and other sports enthusiasts to monitor their heartrate, strides etc. Going beyond apps and wearable sensors there's even news of Ford launching in-car health monitoring services under the Ford SYNC banner. Ford researchers demonstrated a series of possible in-car health and wellness connectivity services to help people with chronic illnesses or medical disorders such as diabetes, asthma or allergies manage their condition while on the go. Apart from these, exergaming / motion gaming has been adding a layer of entertainment to your daily fitness needs for quite some time now with no signs of slowing down. The geeks who are to inherit the earth will no longer be a race of puny intellectuals. We'll soon be looking at a technology-enhanced super geek...

**Link bundle** - <http://bit.ly/cultfitness>



Jawbone UP

### That creepy feeling

"All my life I've had this strange feeling that there's something big and sinister going on in the world", proclaimed Arthur Dent in the *Hitchhiker's Guide to the Galaxy*. Another character in the book explains to him that the feeling "is just perfectly normal paranoia".

Is a certain amount of paranoia normal or is there really something sinister going on behind the scenes that the general populace has been purposefully kept unaware of? The conspiracy culture of which many a geek is part of professes that there is. Geeks from all over the world spend countless hours clutching at various subliminal clues that they feel will unearth some profound mystery only if they look hard enough. There are conspiracies about the 9/11 terror attack, UFO cover-ups, presidential assassinations and even absurd theories that suggest *Harry Potter* is about homosexuality.

Any rational person would probably peg most of these as just flights of fancy. However, thousands of other rational people consumed by their obsession offer up what they feel is conclusive evidence confirming the existence of said cover-up. Most of it is junk and the evidence is usually the result of people drawing patterns where there are none or patterns emerging because thousands of permutations and combinations are bound to create some linkages. It's like staring at a wall and seeing what you want to see.



They live among us... and are probably procreating

At the same time, geeks have been able to uncover several instances of covert action and fudging in the recording of history. Conspiracy is very much a part of geek culture and makes for an interesting hobby. But beware it can consume you. <<http://bit.ly/cultconsp>> ■



# How cultured are you?

Now that you have finished brushing up on tech culture, it's time to find out how cultured you really are. Are you really that ultimate, well-educated geek that you think you are? Are you just a wannabe trying to get into this elite group of super-geeks? Answer the following questionnaire to find out who you really are

Anirudh Regidi  
readersletters@thinkdigit.com

## 1. Owling to you is?

- (hesitantly) A baby owl?
- The phenomena you see in slums all over India
- You and your friends have embarked on an expedition just for this purpose!



## 2. Why this kolaveri di?

- You were among the first to notice it trending...
- Why is this song so familiar? Ah! That guy on the bus had it as a ringtone
- You're aware of the song's existence and have even shared it on Twitter and "liked" it on Facebook



## 3. You're going through your collection of old pictures and come across something hilarious. You...

- laugh and put it back in the album
- immediately post it on Facebook and Twitter
- have just the right caption for it, and the place. A fortnight later it's the new internet phenomenon

## 4. S0m3 p30pl3 4r3 700 l4zy 70 wri73 7hin65 in fu11 1337, r3su17ing 1n 4 53n73nc3 1ik3 7hi5.

- Hey! I can understand a few words
- ThOugh7 y3wll pwn m3 1lk3 4 n00b, h4.. h4..
- You think that a cat must have been prancing on the keyboard



## 5. Which of the following is true? Rick Astley is never going to...

- fart when having dinner
- say hello
- give you up



## 6. Twilight Sparkle, Applejack, Rainbow Dash...

- Does this have anything to do with sparkly vampires?
- Pinkie Pie, Fluttershy, Rarity, Spike...nuff said bro.
- New Baskin-Robbins ice cream flavours?



## 7. CATS said

- All your base are belong to us
- Meow!
- I can haz Cheezburger?

## 8. How do you pronounce "meme"?

- Meem
- Meh-meh
- Mey-mey

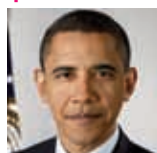
## 9. How will you answer this question?



- bieberfanclub.com
- EleventeenQueen.com
- I would rather report the author for abuse

## 10. The most influential person in your life is...

- Mark Zuckerberg
- Christian Poole
- Jimmy Wales (or Julian Assange?)



## Results

### How to score:

Note down your answers (or memorise them if you think you can). Answers are given at the bottom with correct scoring for each answer. Zero points for not able to decide on an option. Add up your score to get your final result.

|    |    |    |     |
|----|----|----|-----|
| 01 | 51 | 5  | 101 |
| 01 | 51 | 5  | 9   |
| 5  | 01 | 51 | 8   |
| 51 | 5  | 01 | 7   |
| 5  | 51 | 01 | 6   |
| 51 | 5  | 01 | 5   |
| 5  | 51 | 01 | 4   |
| 51 | 01 | 5  | 3   |
| 01 | 5  | 51 | 2   |
| 51 | 01 | 5  | 1   |
| c  | b  | a  |     |

Answers:

### 126-150 Haute

You're IT, the ultimate in g33k style and class. Well-versed in tech cultures of any sort, you're a Geek God, the Errol Flynn of the geek world. This quiz was nothing more than a passing fancy. You flip this page over with a casual flick of the wrist, never sparing a glance at the result, confident in the knowledge that you're in the top 1 per cent anyway.

### 61-125 Wot?

You've been reading Digit for a while now and are reasonably active online. You've been exposed to some true geek culture but have only spared a cursory glance at it even though you believe you know a lot about it. The dark underbelly of the web and its ways are still unknown to you.

### 0-60 Naute

You haven't read the cover story well. Your knowledge of the web and tech culture in general is very superficial. You're wandering on the periphery of geekdom and are yet to take your first baby steps into this awesome and unexplored world. Re-read the cover story and get yourself well-versed with this culture.

## Cover story



- 1 RAPIDSHARE VOLCANO
- 2 DC++ TRIBUTARY
- 3 ZOMATO FIELDS
- 4 TREKKIES TRAILS
- 5 RIVER OF ROBOTICS
- 6 JUNGLE OF DAILY MOTION
- 7 GULF OF YOUTUBE
- 8 MT. VIMEO
- 9 LOLCAT LEGIONS
- 10 FOREST OF TWEETUPS
- 11 LAND OF THE DATA MINERS
- 12 LOL LAKE
- 13 GAMING WIERDLANDS

This map is meant to be indicative of a world where tech culture is the world. The amount of tech culture in the world is so vast that there was no way we could integrate everything into our map. To discuss the map in detail, join the conversation at [www.facebook.com/thinkdigit](http://www.facebook.com/thinkdigit)





EXPOSURE TRIANGLE

EXCLUSIVE ISLES OF 7CHAN

SEA OF MEMES

CAVES OF 4CHAN

STRAIT OF 9GAG

PIRATE BAY



TORRENT DESERT

FORTRESS OF BLOGGER

XANGA FOREST

WORDPRESS PLAINS

FLICKR LAKE

TUMBLR CITY

LEGOLAND

STEAM PUNK



FOREST OPENSOURCE

RIVER OF COSPLAY

PLAINS OF MANGA

MT. COMIICON

DALNET

FREENODE

MOUNTAINS OF PROXIES

H4XX0R ARCHIPELAGO

FJORD OF TOR

MOUNTAIN OF APPS

LAKE OF TEARS

IOS ORCHARDS

MT. ANDROID

SOUND CLOUD SEA

DEVIANART

PIXEL ART

HOSTILE WASTELANDS OF THE INTERNET





Stuff kids are  
into that will

**SHOCK  
YOU**

Mithun Mohandas  
[readersletters@thinkdigit.com](mailto:readersletters@thinkdigit.com)

**T**his page here shall not contain any imagery for the sole reason being that its contents are enough to melt your brain. When we were kids, there would be that one guy or gal who'd be the most messed up amongst the entire lot, and then each successive generation turned out to up the ante. So in a way the kids these days are unequivocally up to some ridiculously messed up antics.

### I'm more extreme than thou . . .

Whether its the competitive spirit in them or ego working it's devious ways, kids try to outperform their peers in one aspect or the other. While in an academic environment, this may be good, it certainly isn't when it is concerned with establishing a hierarchy amongst their peers. We have children undergoing initiation rites to become part of a group. Some of these involve physical violence towards people, particularly towards members of minority communities. This act could only be considered an euphemism if we are to list out what all youngsters are made to do. Recently, in

the UK, arrests were made in a graveyard vandalism case, the surprising part was that all the suspects were youngsters aged 14-15. While this is shocking to an extent, it doesn't compare to the following situation. On an all too popular message board on the internet, one of the members posted an image of a skull and asked for suggestions as to "What should I do with it?". He did as asked and placed his reproductive organ into the orbital cavity of the said cranium. And yes, he posted images of the act.

### An innard for an i . . .

It may not necessarily be about the money but when it is, kids have a way of finding ways to earn some quick cash. Specially since the almighty search engines are more than willing to throw up numerous ways to do so. Yes, we're pretty sure you must've read about Mr.Zheng from China who sold one of his kidneys for RMB 20,000 (₹1,57,903) so that he could get an iPad 2. Was he approached by a shady agent for his kidney? Nope, it was the other way around. One quick search and he found

an advert online which offered him the money. Even though their government undertakes measures to curb this practice, "Organ Tourism" is a common practise and innocent kids are eager enough to offer up their organs for a quick buck.

### Gory imagery . . .

If you've ever been in an accident then you know that it makes for situation that you would never want to be in again. The experience itself is disturbing, the mere thought of reliving the same is enough to send some people in shock. Now imagine a site where people go and post these images... of dismembered people & animals, accidents, abuse, murder victims, etc. If anything has to do with death then there's a good probability that there will be something pertaining to the subject posted there. Beheading videos by extremists or that of execution of prisoners are also found in plenty. Since the theme of these web sites is downright disgusting, the idea of moderators policing this site is alien. If at all, the moderators would ensure the content remains consistent to the theme which incidentally is to 'showcase the truth without censorship'.

### Virtual cash of a different kind

"The birthplace of Anonymous", "the birthplace of memes", etc are some of the phrases that this web site is described by, more commonly known as "4chan". Ranked 998 with majority of its users being in the age group 18-24, an English image-board where users come to discuss a variety of topics. On this forum is one section known as "Random" or /b/. This particular section offers complete anonymity to its posters. The result? A mix of good and bad. On one hand, Anonymous leads the crusade for freedom of the internet while on the other hand, a peculiar behaviour that has arisen is a barter system that uses nude images of kids as an object that can be traded to get anything done. By anything, we mean anything that any of its anonymous members are capable of. Need someone's profile on a social network hacked? Bank account? DDoS any website? Produce "fresh" nudity and maybe someone might do the job for you. Needless to say, economics plays its part and the demand for more "images" rises. ■



# The (d)evolution of a language?

Is the English language evolving into something else because of the cultural shift towards geek culture?

Whence cometh the tongues thee bespeak? Pillagers from yonder lands – Ireland, France and Scotland – bespoke naught a word of it. Overmany pillagers doth bequeath foreign tongues to their younglings, and commoners doth bastardise the language of lords – “prithee” for “I pray thee”, and such and such.

De olde English, the language of the bard from whence we all quote, alas, was nary a language of the uneasy head that doth wear the crown. All the world's a stage, and all the men and women merely players in games that English warlords doth play. Pillaging and plundering across the world, and bequeathing foreign words to thine, amongst other monstrosities.

From about the Eighteenth century onwards, it spread across the globe, along with the English Navy, and became a second language to most of the world, and a first language to many as well. It picked up words from every continent, including words from here in India. So when you want to own a *bungalow* near a *jungle*, and wear *Khakis* all day and dream of *Blighty*, thank us Indians!

Then the internet came along, and people from all over the world were connected and could chat with one another. English spread even further, because it was now able to penetrate German homes, and Finnish schools – a new invasion of sorts. As expected, geeks the world over soon started modifying English to suit their culture. That's where g33k, l-|4x0r and 1337 come from.

Usenet abbreviations were also popularised, especially when chat applications such as ICQ and IRC gained popularity. IRC actually is responsible for the spread of a lot of the currently used internet lingo. Necessity is the mother of all inventions though, and the 160 character limit of SMSes, when mobile phones took off was the ultimate harbinger of death to the chastity belts of the prim and propah!

A lot of us may not like the way people use internet slang, but v r used 2 it now. Heck, v hv even got CVs 4 jobs @ dgt, 4 writers, tht use dis lang, n den pple ask y v din rply 2 their mails!

neway, d point v r trying 2 mk is dat it dosen't mattr whether u like it or nt, because dis is vat is happnin 2 us, v r doing away with useless characters, n trying 2 speed tings up. May b the cming gen vil tlk 2 each other liek this, but as long as dey undrstnd each other, who r v 2 judge?

As v hv said before, it may nt b d most preferred form of evolution, bt can v rly call it devolution? If it cmes dwn 2 a mattr of survival, and it's the g33k culture tht decides whts cool, n wht isnt, den may b dis is hw v wil all tlk sum day. V wil all still undrstnd 1 anothr, n b able 2 cnvrs. If its wht d cultur of d wrld dmands, den it is wht v will gt.

Of course, we can still hope otherwise; I know I will!

[editor@thinkdigit.com](mailto:editor@thinkdigit.com)

**Smartphone Comparison**

Check out our comparison test for 20 of the best smartphones. We help you make the smart choice

**Bazaar**

NAS storage devices, laptops, motherboards, handycams and much more reviewed



# MULTIFUNCTION MANIA: THE ALL-ROUNDERS

Last March, we tested multi-functional devices (MFD) and said that MFDs were slowly but surely replacing standalone printers and they did. However, there hasn't been much happening since then except Wi-Fi and ePrint services turning into mainstream features. Read on to know what else has changed

Aniruddh Subramanian  
[aniruddh.s@thinkdigit.com](mailto:aniruddh.s@thinkdigit.com)

It's only the beginning of 2012 and we can already see so many MFDs packed with features such as Wi-Fi printing and apps support and ePrinting capabilities. While

last year having an MFD with Wi-Fi support was restricted to the high-end models, it is now making its way to a lot of low-end MFDs and we expect most MFDs to have it. Apart from these features, we're also witnessing a

change in the printhead technology that will be used henceforth in the form of LED printers. So here's our prediction for this year: In 2012, slowly but surely LED MFDs will replace conventional laser MFDs.

For this test we received 18 MFDs from various brands such as Brother, HP, Epson, Canon, Panasonic and Dell. Eleven of them were laser MFDs (of which two were laser LED MFDs) and the rest (seven)



## Windows Tango to be easy on RAM

Windows along with Nokia is gearing up to penetrate the mid-tier segment  
<http://bit.ly/wiuJ8b>

## Xbox coming in 2013?

Xbox is reportedly poised to be released in late 2013 with Radeon 6000 GPU  
<http://bit.ly/yXbYmp>

**MFDs below Rs. 20,000**

## HOW WE TESTED?

All the multi-functional devices that we got were tested on our standard MFD test bench consisting of an Intel Core i7 2600K 3.4 GHz CPU, 2 x 4GB of Kingston HyperX DDR3 RAM, ZOTAC GTX 450 GPU, Velociraptor 600GB @ 10,000RPM hard-drive and a Z68 Extreme3 Gen3 motherboard. Considering the fact that not many home and SoHo users buy MFDs over ₹ 20,000, we only called for MFDs below this price.

Before testing the MFDs we ran a few dry runs so as to get them heated up. We used standard A4 size paper for normal print and copy tests, and glossy paper for photo prints. We ran MFD tests such as text printing, mixed document printing, photo printing, copying, scanning, ADF printing and sharpness testing. In the text-only document test we checked clarity of the smallest and largest fonts and rated them on three aspects - edges clarity (Serif fonts), blotting and cracks. In the mixed document, tests we tested the prints against each other for clarity of text, merging colours, changing gradations of colours and white to black progressions. In our photo test, we printed an A4 size test photo, and checked for the sharpness levels, colour output and also looked for flaws such as merging of colours or grain. We considered four aspects where we could rate the quality print-out and then the final quality score was an average of all the individual test scores.

For the copy tests, we compared the output to the source and checked for noise, change in colour level, clarity, etc. The new addition this time around was a dedicated test for checking the sharpness of the print. We also checked scanning speeds and quality in all the MFDs. Each test was timed and scored accordingly.

We also gave importance to an MFD's features - the more the features the better the MFD scored. We also rated the MFDs for their ease of use - setting them up, installation of cartridges, and their software interface. The build quality of the MFDs was also given importance and were given scores accordingly. Although most MFDs have become cheaper to buy, they still have high running costs, considering this fact we also calculated the total cost of ownership (TCO) and gave it a sizable weightage. For calculating the TCO, we assumed that the average life of an MFD in Home and SoHo condition would be 3 years and prints taken in a year would be approximately 1,000 for an inkjet MFD and 2000 for a laser MFD and then calculated the cost of owning the MFD for that long. We also assumed that one would take a Black and White print 60 per cent of the time and a colour print 40 per cent of the time. Keeping this in mind we calculated the cost of the MFD, cost of cartridges and thus cost per print. The TOC index we got was considered in the overall score of the MFD.

play along with the necessary physical buttons.

The HP Photosmart 6510, though not truly a compact MFD, sports a good design. Its glossy-cum-matte black body ensured that the HP MFD stood out from the rest. Its control panel, which is a massive 3.45-inch touchscreen, is hugely convenient. The HP 6510 has no physical buttons, except a power on switch. Everything else is touch-sensitive.

### Build

The only MFD that delivers excellent build quality is the Epson K300. While most MFDs struggled with flimsy input and output trays and scanner flaps, the K300 had the sturdiest build among them all. Unfortunately, the same can't be said of the Epson K200, which had the worst build among the lot - the input tray was so flimsy that it was in constant danger of getting damaged.

The Epson WP-4511 is the bulkiest and biggest MFD of the lot. We expected it to have the best build, but to our disappointment it was found to be lacking in certain areas. The input tray was extremely well made with least amount of flim-

were inkjet MFDs. Let's look at each category.

### Inkjet MFDs

We received two colour inkjet MFDs from Brother (MFC-J430W and MFC-J625DW) two mono inkjet MFDs from Epson (K200 and K300), two colour inkjet MFDs from Epson (Me Office 535 and WorkForce Pro-4511) and finally one colour inkjet MFD from HP (Photosmart 6510).

### Design

Four MFDs made a mark in this category for their uber-compact design. The two Brother MFDs, MFC-J430W and MFC-J625DW, have the best design among these four MFDs. Both the MFDs have a black body with a glossy Automatic Docu-

ment Feeder (ADF) flap and a prominent black bezel for the display screen. This design is an exciting break from the vanilla, off-white, corporate looking MFDs.

The other two MFDs with a compact design come from Epson, the Epson ME Office 535 and Epson K200. The Epson K200 doesn't have an awe-inspiring design but what makes it a hit is the no-nonsense simplistic design - even a layman would be able to set it up. The MFD, however, has a very boring and drab look with the standard off-white body. The Epson K200's control panel doesn't have too many buttons or a screen, making you dependent on a PC to make all the setting changes or to give the

scan commands. On the other hand, the Epson ME Office 535 is a sexy looking MFD with a completely black body. The control panel on the ME Office 535 adds a small colour dis-



**Brother MFC-J625DW: The best performer of the test**

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In its most recent Earnings report, Apple announced having made a whopping \$13.06 billion in profit  
<http://bit.ly/xJV5PF>

business, but the scanner flap and output tray weren't up to mark. Except for Epson's K300, all the other MFDs faltered to live up to our expectations in terms of build quality.

### Stand-out features and Control Panel

The HP Photosmart 6510 was the only MFD to feature a full touchscreen control panel. Its 3.45-inch resistive touchscreen with six touch-sensitive buttons was extremely responsive. You also get a full QWERTY keyboard to type passwords for routers (Yes it supports Wi-Fi connection and setting it up is a cake walk). The MFD's UI is extremely smooth and easy to work with. The HP 6510 also packs automatic duplex printing. It comes with ePrinting ability. Setup your own HP MFD's email ID and then you can give print commands over the Web by sending the documents to that email ID. Smart, eh? You can also print wirelessly through an iPhone or iPad. Noteworthy extras include the Snapfish app, ability to print sudoku puzzles, quick forms, print graph paper etc, all of which can be downloaded on the printer. Overall, the HP Photosmart 6510 is one feature-packed MFD, and we were quite impressed.

On the other hand, the only feature to highlight in the Epson K200 is the auto-

duplex support, if you're looking for a budget MFD with this support, it's a perfect match. Unlike other MFDs we received for the test, the Epson WorkForce Pro WP-4511 had two paper sources – an inner input tray and an outer input tray. You can either ask it to choose the input paper source automatically or select one while giving the print command. Another feature of the WP-4511 that impressed us was the detachable scanner flap – it can be removed to accommodate thick books for scanning or copying. With the Epson WorkForce Pro WP-4511, navigating the UI on the 2.5 inch colour LCD isn't a huge task. However, a home screen would have been appreciated on which we could

tantly a home button, that takes you to the home screen. Its UI is absolutely straightforward and easy to use. The MFD also features an SD, and MS Pro card reader slot on the front. The K300 gets a smartly designed ADF slot, which when open nicely makes up the input and output tray and when close gives you one continuous smooth design, as if ADF slot doesn't exist. The Brother MFC-J625DW features a touchscreen display, but what stands out with its UI is three customisable favourite buttons – you can assign your most used tasks to them making it easy to perform

## SCANNER

If you are somebody who takes a lot of scans/copies and find it difficult to take scans/copies of thick books, then always look for MFDs with extendable scanner bed. This allows really thick books to be scanned with ease. For e.g., The scanner flap on the Epson WorkForce Pro-WP4511 is completely detachable letting you take scans of absolutely gigantic books.

fall back on whenever a new task started as it gets confusing with pressing the back button only to realise that the action is unavailable. Otherwise the MFD's entire interface is easy to use and accessing necessary settings is quick and easy.

The control panel of the Epson Me Office 535 has all the necessary buttons and impor-

everyday tasks. From the control panel of the MFC-J625DW you can change all the settings for scanning or copying. You also get Wi-Fi support and setting it up isn't a huge task at all.

Only two inkjet MFDs came with front-facing USB 2.0 ports, the Epson WorkForce Pro-4511 and the Brother MFC-J625DW. This is something we expected all the MFDs to offer as a standard, but sadly it wasn't to be.

### Ease of use

Installing print cartridges for the set of inkjet MFDs isn't difficult. If you encounter roadblocks, a glance at the MFD's quick guide is enough to fix things. In the case of the HP Photosmart 6510,

**HP Photosmart 6510: The most easy-to-use MFD of the bunch with decent performance**

its display screen plays a demo of the entire procedure, which is super convenient. However, one aspect on the HP Photosmart 6510 that really annoyed us was its inability to remove the input tray completely; loading extra paper sheets into the input tray was irksome.

On the Epson K200 and K300, the control panel lacks a dedicated scan button, which means that any scanning jobs will require access to a PC. This is neither quick nor convenient. With the buttons on the Epson WorkForce Pro-WP4511 the keys weren't too flat. A slight bulge for better haptic feedback would have been nice; nevertheless it's enough to make you realise you pressed the key. Interestingly, we got the best keypad experience on the HP Photosmart 6510, even though it has a resistive touchscreen.

### Winner

According to our test, Brother MFC-J625DW was awarded



**Brother MFC-J430W: It performed as good as the Brother MFC-J625DW, but lagged behind in features**



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**MFD comparison test**

the **Best Performer**. Not only did it give great quality prints, it did this at a fast rate. The Brother MFC-J430 was almost as fast the Brother MFC-J265DW in terms of print speed but slightly lagged behind in terms of print quality. Also, Brother MFC-J430 lost out to Brother MFC-J265DW on the feature set. However, Brother MFC-J430



Canon MF-3010: It was the fastest performing MFD in our test, across categories

bagged our **Best Buy** award as it gave the best performance to price ratio.

The HP Photosmart 6510 wins our **Editor's Pick** for delivering decent enough performance and for being the most easy-to-use MFD. Including laser MFDs, its 3.45-inch touch-screen control panel was the easiest to use in our entire MFD test. Another big selling point of the HP Photosmart 6510 was the plethora of features it offered – ePrint, apps, Wi-Fi, SD MMC and DUO card slot and auto-duplex printing.

### Laser MFDs

We received eleven laser MFDs in all, four from Brother (DCP-7065DN, DCP-7055, MFC-7360 and MFC-7860DW), one each from Dell (1135n), HP (LaserJet

Pro M1213nf) and Panasonic (KX-MB1520 SX) and two each from Epson (CX17NF and MX14) and Canon (imageClass MF4420w and imageClass MF-3010). Only one of the eleven MFDs was a laser colour MFD – the Epson CX17NF. Not only is it a laser colour MFD, it's also a LED MFD.

### Design

The Canon imageClass MF-4420w, Canon imageClass MF-3010 and Panasonic KX-MB1520 SX were the ultra-compact MFDs of the entire lot, however these models didn't come with ADF. The two MFDs



Epson ME Office 535: The most compact, space saving MFD

from Brother MFC-7360 and MFC-7860DW were the most compact MFDs with ADF.

The Canon imageClass MF4420w is the high-end model from Canon whereas the Canon imageClass MF-3010 is the more budget-friendly model. Both have a completely black body with a slight difference in their design. The Canon



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# SIMPLE & SMART

## PANASONIC'S SPACE- SAVING PRINT SOLUTIONS

**M**any say gone are the days of paper - we live in an era dominated by eBooks, online Photo Albums, and in an increasingly paper-less world. But even today we all take prints - almost on an everyday basis, in schools, offices, retail stores, you name it. What's interesting is the the printing industry has seen a significant shift over the past few years. And even printers are no longer those huge bulky devices that occupied all your desk space and only took prints from your PC. Printers have shed weight and size to sit in harmony with all other shrinking devices at your desk. Day by day they are getting more and more compact - consuming lesser space at your desk, and lesser power, too. However, the goodies don't stop here,

with MFD's on the rise a printer does more than just print from your PC. We ourselves wish to print directly from devices we have in our hand - mobiles and tablets. Bluetooth printing, Wi-Fi printing, network printing are all a standard feature today. Apart from printing, scanning, sending faxes and copying have all become a part of the entire package called printer.

### PRINTERS DO MORE

With scanning, faxing and copying already been made a standard - manufacturers today are shifting their focus towards providing Wi-Fi support, ePrinting support and building apps for their respective printers. The most intriguing part of all is the kind of apps manufacturers





are developing - from apps that allow you to print news, RSS feeds, colouring sketches for kids, graphs, checking weather, playable sudoku puzzles and most important for many access to Facebook and Twitter. But while doing all this, manufacturers have recognized the need for printers to get smaller, smarter and more power efficient. This is mainly because of increasing demands of consumers who require printers to be more than just dull boxes sitting in some forgotten corner of your living room. To that effect, Panasonic has a range of print offerings that keep these three things in focus - space, features and performance. So let's get through some of them in the next few paragraphs.

## PANASONIC'S OFFERINGS

The Panasonic's Laser Multifunction MB 1500 series is one of the printer series that's trying to deliver some of the features we talked about above. One of the best points of the printer is its size and design packed with quality performance. It has a cuboidal form factor and is extremely compact in size. In fact the printer has a slim back design and because the power input is from the sides you can actually keep the printer against the wall and not worry about damaging the power wire. Having an inner paper output tray means there is no protrusion from the front of the printer and this effectively cuts the actual installation area by 25%.

Most of the daily and frequent activities that revolves around printing, copying, scanning or faxing can be taken care of right from the control panel. The control panel is



**ONE OF  
THE BEST  
POINTS  
OF THE  
PANASONIC  
PRINTER  
IS ITS  
SIZE AND  
DESIGN**

also been designed uniquely, a slanted ergonomic design ensures that using the control panel is absolutely easy whether you are standing or sitting down. The printer also doesn't disappoint with its core functionality. The Easy Print Utility that comes bundled with the printer lets you merge and print files created using different softwares. For e.g. You can merge a Word and Excel document together and print it on the same page. Another interesting feature is its copying function called N in 1 function. Using it you can take prints of multiple sets of data on the same sheet, for e.g. You can take the copy

## TOP HIGHLIGHTS

- 18PPM Laser Multifunction printer
- Suitable to modern home / offices which needs compact & smart high tech products
- Built-in digital speaker phone & mic for fax calling exemplifies high technology for great convenience
- **Space saving compact body:** Cuts the actual installation area by 25%
- Frequently used buttons are placed on the front panel
- MB1500 series is a composite cartridge printer
- Panasonic MB1500, MB1520 prices: ₹8,999 and ₹10,990, respectively



of your driving license to the count of 8 on the same page. The printer also features a ID-copy functionality using which you can print the data from both sides on the same page. You can also scan colour documents to your PC with a maximum resolution of 600 x 1200 dpi (Optical) or 19200 x 19200 dpi (Interpolated). The printer comes with a built-in digital speaker and mic for all your fax needs thus eliminating the need of a handset unit resulting in a compact all-in-one printer package. Finally, the aspect that makes or breaks a printer is the toner cartridge and the one used in the printer will last for a whopping 2500 pages at ISO/IEC 19752 Standard, this printer series has been nailed to perfection. Panasonic has found the right formulae for designing printers for home end users, SOHO segment and individual desks in offices - Keep it simple, Keep it smart. ■



| Inkjet Printers                                                                                                                                                                            |                       |                     |                        |                 |                 |                         |                      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------|------------------------|-----------------|-----------------|-------------------------|----------------------|--|
| Brand                                                                                                                                                                                      | HP                    | Brother             | Brother                | Epson           | Epson           | Epson                   | Epson                |  |
| Model                                                                                                                                                                                      | Photosmart 6510       | MFC-J625DW          | MFC-J430W              | K200            | K300            | WP-4511                 | Me Office 535        |  |
| Price (₹)                                                                                                                                                                                  | 9,999.00              | 10,390.00           | 7,790.00               | 9,999.00        | 11,599.00       | 16,999.00               | 5,999.00             |  |
| Features (Out of 30)                                                                                                                                                                       | 17.99                 | 26.47               | 18.46                  | 10.23           | 15.30           | 21.80                   | 9.33                 |  |
| Build Quality (Out of 10)                                                                                                                                                                  | 4.88                  | 5.61                | 4.88                   | 3.90            | 6.10            | 5.61                    | 5.12                 |  |
| Ease of Use (Out of 10)                                                                                                                                                                    | 6.92                  | 5.38                | 5.38                   | 4.62            | 4.62            | 4.62                    | 5.38                 |  |
| Performance (Out of 40)                                                                                                                                                                    | 27.03                 | 30.26               | 28.91                  | 17.75           | 18.30           | 25.15                   | 23.29                |  |
| Total Cost of Ownership for 1000 prints (Out of 10)                                                                                                                                        | 5.58                  | 6.84                | 8.80                   | 7.48            | 6.50            | 4.33                    | 9.00                 |  |
| Grand Total                                                                                                                                                                                | 62.40                 | 74.56               | 66.43                  | 43.97           | 50.81           | 61.51                   | 52.12                |  |
| Warranty (Years)                                                                                                                                                                           | 1                     | 1                   | 1                      | 1               | 1               | 1                       | 1                    |  |
| Connectivity                                                                                                                                                                               |                       |                     |                        |                 |                 |                         |                      |  |
| PictBridge Support (Y/N)                                                                                                                                                                   | N                     | N                   | N                      | N               | N               | N                       | N                    |  |
| USB Flash Drive Support (Y/N)                                                                                                                                                              | N                     | Y                   | N                      | N               | N               | Y                       | N                    |  |
| Network printing support (Y/N)                                                                                                                                                             | Y                     | Y                   | Y                      | Y               | Y               | Y                       | N                    |  |
| WiFi support (Y/N)                                                                                                                                                                         | Y                     | Y                   | Y                      | N               | N               | N                       | N                    |  |
| Bluetooth Printing (Y/N)                                                                                                                                                                   | N                     | N                   | N                      | N               | N               | N                       | N                    |  |
| Memory Card support (Y/N)                                                                                                                                                                  | Y                     | Y                   | N                      | N               | N               | N                       | Y                    |  |
| Features                                                                                                                                                                                   |                       |                     |                        |                 |                 |                         |                      |  |
| Maximum print resolution (dpi)                                                                                                                                                             | 4800 x 1200 dpi       | 6000 x 1200 dpi     | 6000 x 1200 dpi        | 1440 x 720 dpi  | 1440 x 720 dpi  | 4800 x 1200 dpi         | 5760 x 1440 dpi      |  |
| Power Saving Mode (Y/N)                                                                                                                                                                    | Y                     | Y                   | Y                      | Y               | Y               | Y                       | Y                    |  |
| Duplex printing (Y/N)                                                                                                                                                                      | Y                     | Y                   | N                      | Y               | Y               | Y                       | N                    |  |
| Ink Saving Mode (Y/N)                                                                                                                                                                      | Y                     | Y                   | Y                      | Y               | Y               | Y                       | Y                    |  |
| Zoom / Fit to Page (Y/N)                                                                                                                                                                   | Y                     | Y                   | Y                      | Y               | Y               | Y                       | Y                    |  |
| Ink Type                                                                                                                                                                                   | Inkjet                | Inkjet              | Inkjet                 | Inkjet          | Inkjet          | Inkjet                  | Inkjet               |  |
| Size of display on printer                                                                                                                                                                 | 3.45-inch touchscreen | 1.9 inch touchscren | 1.9" Color LCD Display | -               | 2-line LCD      | 2.5 inch TFT Colour LCD | 1.44" TFT Colour LCD |  |
| Number of Cartridges Used                                                                                                                                                                  | 4                     | 4                   | 4                      | 1               | 1               | 4                       | 4                    |  |
| Cartridge Colours                                                                                                                                                                          | CMYK                  | CMYK                | CMYK                   | Black           | Black           | CMYK                    | CMYK                 |  |
| Total Paper Tray Capacity (Plain A4)                                                                                                                                                       | 100                   | 120                 | 100                    | 150             | 250             | 250                     | 100                  |  |
| ADF support                                                                                                                                                                                | N                     | Y                   | Y                      | N               | Y               | Y                       | N                    |  |
| ADF capacity                                                                                                                                                                               | -                     | 20                  | 20                     | N               | 30              | 30                      | -                    |  |
| Dimensions(mm)                                                                                                                                                                             | 436 x 381 x 161       | 403 X 254 X 180     | 403 X 378 X 180        | 445 X 363 X 171 | 446 X 360 X 228 | 460 X 420 X 299         | 390 X 300 X 145      |  |
| Weight (kg)                                                                                                                                                                                | 5.61                  | 8.98                | 8.98                   | 6.1             | 7.7             | 12.6                    | -                    |  |
| Build Quality                                                                                                                                                                              | 4.88                  | 5.61                | 4.88                   | 3.9             | 6.1             | 5.61                    | 5.12                 |  |
| Ease of Use                                                                                                                                                                                | 6.92                  | 5.38                | 5.38                   | 4.62            | 4.62            | 4.62                    | 5.38                 |  |
| Performance                                                                                                                                                                                |                       |                     |                        |                 |                 |                         |                      |  |
| Text print (Time) (secs)                                                                                                                                                                   | 15.37                 | 32.17               | 32.37                  | 32.71           | 32.94           | 51.28                   | 14.58                |  |
| Text print (Quality)                                                                                                                                                                       | 5.5                   | 6.50                | 7                      | 5               | 5               | 6.5                     | 6.5                  |  |
| Text print (Speed/Eco) 5 copies (Time) (secs)                                                                                                                                              | 26.68                 | 21.75               | 21.97                  | 17.07           | 17.37           | 23.73                   | 20.03                |  |
| Text print (Speed/Eco) 5 copies (Quality)                                                                                                                                                  | 6.5                   | 7                   | 6.5                    | 4               | 4               | 5.5                     | 5                    |  |
| Mixed Document Print (Time)                                                                                                                                                                | 59.55                 | 43.62               | 43.31                  | 38.09           | 43.05           | 72.36                   | 60.59                |  |
| Mixed Document Print (Quality)                                                                                                                                                             | 6.5                   | 6.00                | 6                      | 6.5             | 7               | 7                       | 6                    |  |
| Mixed Document Print (Speed/Eco) 5 copies (Time)                                                                                                                                           | 36.34                 | 33.5                | 31.39                  | 21.8            | 21.98           | 49.56                   | 73.98                |  |
| Mixed Document Print (Speed/Eco) 5 copies (Quality)                                                                                                                                        | 5                     | 5.00                | 5                      | 5               | 5               | 5                       | 4                    |  |
| Photo (Time)                                                                                                                                                                               | 162.53                | 131.42              | 123.45                 | -               | -               | 173.87                  | 721.18               |  |
| Photo (Quality)                                                                                                                                                                            | 7.5                   | 9.00                | 6.5                    | -               | -               | 6                       | 6                    |  |
| Photo 2 (Time)                                                                                                                                                                             | 141.82                | 115.79              | 104.66                 | -               | -               | 154.8                   | 599.1                |  |
| Photo 2 (Quality)                                                                                                                                                                          | 8                     | 9                   | 7.5                    | -               | -               | 7.5                     | 6.5                  |  |
| Copy Test (Time) (Colour)                                                                                                                                                                  | 37.46                 | 75.55               | 75.56                  | -               | -               | 95.2                    | 81.65                |  |
| Copy Test (Quality) (Colour)                                                                                                                                                               | 6                     | 6                   | 6.5                    | -               | -               | 6.5                     | 6.5                  |  |
| Copy Test (Time) (B&W)                                                                                                                                                                     | 25.64                 | 18.94/61.25         | 18.71/61.08            | 9.29            | 19.76           | 12.36/91.38             | 26.33                |  |
| Copy Test (Quality) (B&W)                                                                                                                                                                  | 5.5                   | 7.00                | 7.5                    | 5.5             | 5.5             | 7                       | 7                    |  |
| Scan Test (Time) (colour 300dpi)                                                                                                                                                           | 22.9                  | 20.52               | 21.91                  | 28.25           | 18.55           | 22.9                    | 47.65                |  |
| Scan To USB (Colour 300 dpi)(Time)                                                                                                                                                         | -                     | 23.66               | -                      | -               | -               | 41.91                   | -                    |  |
| Scan from ADF (3 Pages, Time) (B&W)                                                                                                                                                        | -                     | 40.82               | 39.72                  | -               | 25.23           | -                       | -                    |  |
| Scan from ADF (3 Pages, Time)(Colour)                                                                                                                                                      | -                     | 39.74               | 39.51                  | -               | 48.73           | -                       | -                    |  |
| Sharpness Test (Quality)                                                                                                                                                                   | 6                     | 7.00                | 7                      | 5               | 5               | 7                       | 6.5                  |  |
| Cost of Ownership                                                                                                                                                                          |                       |                     |                        |                 |                 |                         |                      |  |
| Ink/Toner cost B&W                                                                                                                                                                         | 675.00                | 400.00              | 400.00                 | 1,323.00        | 1,323.00        | 1,845.00                | 390.00               |  |
| Ink/Toner cost Colour                                                                                                                                                                      | 1,797.00              | 1,200.00            | 1,200.00               | -               | -               | 2,631.00                | 1,323.00             |  |
| No of prints per B&W cartridge                                                                                                                                                             | 250.00                | 600.00              | 600.00                 | 2,000.00        | 2,000.00        | 2,400.00                | 250.00               |  |
| No of prints per Colour cartridge                                                                                                                                                          | 300.00                | 600.00              | 600.00                 | -               | -               | 1,200.00                | 300.00               |  |
| For Inkjet 1000 prints (60% B&W, 40% Colour)(100% B&W for B&W Inkjet printers) For Laser Printers - 2000 prints (100% B&W) For Laser LED colour printers 2000 prints (60% B&W, 40% Colour) | 4,286.00              | 1,266.67            | 1,266.67               | 661.50          | 661.50          | 1,415.13                | 2,856.00             |  |
| TCO for 1 year                                                                                                                                                                             | 14,285.00             | 11,656.67           | 9,056.67               | 10,660.50       | 12,260.50       | 18,414.13               | 8,855.00             |  |
| Cost per print (for first year)                                                                                                                                                            | 14.29                 | 11.66               | 9.06                   | 10.66           | 12.26           | 18.41                   | 8.86                 |  |
| Cost per print for 3 years lifetime of product                                                                                                                                             | 7.62                  | 4.73                | 3.86                   | 3.99            | 4.53            | 7.08                    | 4.86                 |  |



| Laser Printer |                 |                      |                 |                        |                           |                             |                 |                 |                   |                 |                 |
|---------------|-----------------|----------------------|-----------------|------------------------|---------------------------|-----------------------------|-----------------|-----------------|-------------------|-----------------|-----------------|
|               | Epson           | HP                   | Epson           | Panasonic              | Canon                     | Canon                       | Dell            | Brother         | Brother           | Brother         | Brother         |
|               | CX17NF          | LaserJet Pro M1213NF | MX14            | KX-MB1520 SX           | MF4420w                   | MF-3010                     | 1135n           | DCP-7065DN      | DCP-7055          | MFC-7360        | MFC-7860DW      |
|               | 20,000.00       | 16,994.00            | 7,499.00        | 10,900.00              | 16,995.00                 | 9,900.00                    | 14,000.00       | 13,800.00       | 8,990.00          | 13,990.00       | 18,990.00       |
|               | 19.81           | 9.19                 | 10.17           | 8.36                   | 6.83                      | 8.93                        | 19.95           | 13.99           | 7.95              | 11.89           | 13.99           |
|               | 5.37            | 4.88                 | 6.1             | 3.66                   | 5.85                      | 5.85                        | 5.85            | 7.8             | 4.88              | 6.83            | 6.83            |
|               | 6.92            | 6.92                 | 6.15            | 6.15                   | 6.15                      | 4.62                        | 6.15            | 5.38            | 5.38              | 5.38            | 5.38            |
|               | 28.78           | 25.05                | 25.79           | 22.3                   | 27.19                     | 25.05                       | 25.23           | 27.7            | 23.88             | 27.03           | 28.23           |
|               | 3.64            | 4.79                 | 9               | 7                      | 4.67                      | 6.78                        | 3.58            | 5.91            | 7.74              | 5.84            | 4.51            |
|               | 64.52           | 50.83                | 57.21           | 47.47                  | 50.69                     | 51.23                       | 60.76           | 60.78           | 49.83             | 56.97           | 58.94           |
|               | 1               | 1                    | 1               | 1                      | 1                         | 1                           | 1               | 1               | 1                 | 1               | 1               |
|               | N               | N                    | N               | N                      | N                         | N                           | N               | N               | N                 | N               | N               |
|               | Y               | N                    | Y               | N                      | N                         | N                           | N               | N               | N                 | N               | N               |
|               | Y               | Y                    | Y               | N                      | Y                         | N                           | Y               | Y               | N                 | Y               | Y               |
|               | N               | N                    | N               | N                      | Y                         | N                           | N               | N               | N                 | N               | Y               |
|               | N               | N                    | N               | N                      | N                         | N                           | N               | N               | N                 | N               | N               |
|               | N               | N                    | N               | N                      | N                         | N                           | N               | N               | N                 | N               | N               |
|               | 1200 x 2400 dpi | 1200 dpi             | 1200 X 1200 dpi | 600 X 600 dpi          | 1200 x 600 dpi            | 1200 (equivalent) x 600 dpi | 1200 x 1200 dpi | 2400 x 600 dpi  | 2400 x 600 dpi    | 2400 x 600 dpi  | 2400 x 600 dpi  |
|               | Y               | N                    | Y               | Y                      | Y                         | Y                           | Y               | Y               | Y                 | Y               | Y               |
|               | N               | N                    | N               | N                      | N                         | N                           | N               | Y               | N                 | N               | Y               |
|               | Y               | Y                    | Y               | Y                      | Y                         | Y                           | Y               | Y               | Y                 | Y               | Y               |
|               | Y               | Y                    | Y               | Y                      | Y                         | Y                           | Y               | Y               | Y                 | Y               | Y               |
|               | Toner           | Toner                | Toner           | Toner                  | Toner                     | Toner                       | Toner           | Toner           | Toner             | Toner           | Toner           |
|               | 4-line LCD      | 2-line LCD           | 4-line LCD      | 2 line LCD (16 digits) | 5-line LCD with backlight | 7 Segment (1 digit) LED     | 2-line LCD      | 2-line LCD      | 2-line LCD        | 2-line LCD      | 2-line LCD      |
|               | 4               | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | CMYK            | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 160             | 150                  | 160             | 150                    | 250                       | 150                         | 250             | 250             | 250               | 250             | 250             |
|               | Y               | Y                    | N               | N                      | N                         | N                           | Y               | Y               | N                 | Y               | Y               |
|               | 15              | 35.00                | -               | -                      | -                         | -                           | 40              | 35              | -                 | 35              | 35              |
|               | 410 x 389 x 338 | 435 x 265 x 306      | 410 x 389 x 299 | 360 x 380 x 203        | 390 x 414 x 301           | 372 x 276 x 254             | 416 x 415 x 319 | 404 x 399 x 315 | 405 x 398.5 x 268 | 404 x 399 x 315 | 404 x 399 x 315 |
|               | 15              | 8.30                 | 8.9             | 9                      | 10.55                     | 8.2                         | 11.52           | 11.39           | 9.8               | 11.38           | 11.61           |
|               | 5.37            | 4.88                 | 6.10            | 3.66                   | 5.85                      | 5.85                        | 5.85            | 7.80            | 4.88              | 6.83            | 6.83            |
|               | 6.92            | 6.92                 | 6.15            | 6.15                   | 6.15                      | 4.62                        | 6.15            | 5.38            | 5.38              | 5.38            | 5.38            |
|               | 15.96           | 11.01                | 11.48           | 10.49                  | 7.1                       | 9.69                        | 13.47           | 10.52           | 12.28             | 10.65           | 10.70           |
|               | 8               | 8.5                  | 9               | 6                      | 7                         | 8                           | 8               | 8               | 8                 | 9               | 9               |
|               | 35.71           | 21.62                | 17.61           | 23.71                  | 16.94                     | 21.55                       | 24.75           | 18.47           | 22.62             | 19.47           | 18.52           |
|               | 6.5             | 7.5                  | 7               | 6                      | 6                         | 6                           | 8               | 7.5             | 7                 | 7               | 8               |
|               | 18.81           | 12.2                 | 11.21           | 12.01                  | 8.91                      | 12.78                       | 13.06           | 11.64           | 13.03             | 11.75           | 11.66           |
|               | 7               | 8.5                  | 8               | 6.5                    | 6                         | 6                           | 7               | 7               | 7.5               | 6               | 7               |
|               | 39.59           | 22.62                | 18.98           | 25.11                  | 18.73                     | 33.31                       | 26.26           | 19.76           | 24.14             | 20.52           | 19.55           |
|               | 7               | 7                    | 5.5             | 5.5                    | 6.5                       | 5                           | 8               | 6.5             | 6.5               | 6               | 6               |
|               | 27.45           | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 5.5             | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 26.09           | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 6.5             | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 43.2            | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 8               | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 31.28           | 18.65                | 23.65           | 10.1                   | 9.67                      | 11.75                       | 11.65           | 9.98            | 16.91             | 10.07           | 10.00           |
|               | 5.5             | 5.50                 | 6               | 5.5                    | 6.5                       | 9                           | 6               | 5.5             | 5                 | 5               | 5.5             |
|               | 14.59           | 20.32                | 18.56           | 17.61                  | 19.35                     | 12.38                       | 20.3            | 19.31           | 19.7              | 18.65           | 18.71           |
|               | 10.56           | -                    | 10.44           | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 42.73           | 70.86                | -               | -                      | -                         | -                           | 66.43           | 33.39           | -                 | 32.6            | 33.45           |
|               | 36.85           | 73.63                | -               | -                      | -                         | -                           | 66.29           | 31.34           | -                 | 32.05           | 32.56           |
|               | 5.5             | 5.00                 | 6               | 5                      | 7.5                       | 7                           | 6               | 7.5             | 7.5               | 7.5             | 8               |
|               | 3,022.00        | 2,800.00             | 1,766.00        | 4,100.00               | 4,495.00                  | 3,795.00                    | 4,800.00        | 1,800.00        | 1,340.00          | 1,800.00        | 1,800.00        |
|               | 9,066.00        | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 2,000.00        | 1,500.00             | 1,000.00        | 2,500.00               | 2,100.00                  | 1,600.00                    | 700.00          | 1,200.00        | 700.00            | 1,200.00        | 1,200.00        |
|               | 1,400.00        | -                    | -               | -                      | -                         | -                           | -               | -               | -                 | -               | -               |
|               | 7,295.97        | 3,733.33             | 3,532.00        | 3,280.00               | 4,280.95                  | 4,743.75                    | 13,714.29       | 3,000.00        | 3,828.57          | 3,000.00        | 3,000.00        |
|               | 27,295.97       | 20,727.33            | 11,031.00       | 14,180.00              | 21,275.95                 | 14,643.75                   | 27,714.29       | 16,800.00       | 12,818.57         | 16,990.00       | 21,990.00       |
|               | 13.65           | 10.36                | 5.52            | 7.09                   | 10.64                     | 7.32                        | 13.86           | 8.40            | 6.41              | 8.50            | 11.00           |
|               | 10.63           | 4.70                 | 3.02            | 3.46                   | 4.97                      | 4.02                        | 9.19            | 3.80            | 3.41              | 3.83            | 4.67            |

## Are expensive batteries worth it?

An interesting study of whether buying expensive batteries actually makes a difference and if they're worth the buck  
<http://bit.ly/xuSzie>

## Hexplane – An aircraft?

The guys at Oliver VTOL plan to make a six-engine airliner-helicopter hybrid  
<http://bit.ly/zsUWdm>

MF-3010 has a flat front with two glossy side strips and a glossy control panel. And since it has a flat front it's very difficult to see the control panel unless it is kept at chest height. The Canon MF4420w, on the other hand, has a protruding control panel and output tray. The Panasonic KX-MB1520 SX MFD, too, comes in a completely black body. Giving it an edge over Canon is its non-protruding output tray or control panel. The control panel has been designed with a slightly slanted profile, not only making it easy to see but also making it easy to use. The only glitch in Panasonic's MFD design is it doesn't really come with a paper stopper so prints tend to fall off.

The two Brother MFDs, MFC-7360 and MFC-7860DW have a completely identical design. The former has a completely off-white body with only the manual feed slot in a grey shade, whereas, the latter has a black body with only the manual feed slot in a glossy finish. The control panel on both of the Brother MFDs has been designed with a slanted profile, making it very easy to see and use. The Brother DCP-7065DN, is a very similar design to these two Brother products, but doesn't provide fax support. This change is reflected in the control panel which has fewer function buttons.

The HP Laserjet Pro M1213NF MFP, the Epson

AcuLaser CX17NF and the AcuLaser MX14 were the biggest and bulkiest of the entire lot. The Epson CX17NF and the MX14 were the only two LED MFDs we received and they were well-designed as well. Instead of the standard protruding output trays they both have an inner output tray. The only sad part is that they both have a corporate feel to them, with completely off-white bodies. The HP Laserjet Pro M1213NF MFP, despite having a completely black body, still has a corporate ring to it. These models feel like they've been specifically designed keeping small offices in mind.

We were eager to test the Dell MFD out. The Dell 1135n does look like it's designed to offer compactness. It's the only other MFD with ADF support that really comes close to the compactness of the two Brother MFDs mentioned earlier.

### Build

Only a handful of MFDs seemed to have really paid any attention to their build. It was very disappointing – either the input or output tray was flimsily built, the scanner top was poorly made, or the ADF slot was rickety. None of the MFDs we received came with an all-round stand-out build. However, of the entire lot, the Brother DCP-7065DN put together the best. Its scanner flap is the



Epson AcuLaser MX14: A value for money LED MFD

least flimsy among the competition. The input and output tray are well made. Sadly only the ADF slot lacked a little in comparison.

The other MFDs that managed to deliver decent build are Epson MX14, Canon imageClass MF-3010, Dell 1135n, Brother DCP-7055, Brother MFC-7360 and Brother DCP-7860DW. The Canon imageClass MF-3010 has an ultra-sturdy body, but we noticed a slight flimsiness with its input tray. The Panasonic KX-MB1520 had the worst build of the lot with an extremely flimsy scanner flap and a very poorly built tray.

### Stand-out features and Control Panel

Most of the laser MFDs are targeted at small offices or home offices and these MFDs are especially tuned towards print jobs. They're expected to throw

out good quality prints while being fast. These MFDs will print superb quality text and mixed documents as compared to the inkjet MFDs. They, however, don't have a lot of features to highlight apart from their standard print, copy, scan and fax functions.



Dell 1135n: A feature packed yet compact MFD

HP Laserjet Pro M1213NF MFP is no different. It gives you a complete command over the print settings right from the control panel itself. Using the control panel you can give a copy command, set the number of prints required, increase or decrease the size of the print,

## TCO

Though the MFDs have become cheap to buy, the price of cartridges increase the running cost of your MFD. Before buying a MFD, based upon your usage, calculate a rough cost of owning the printer for a minimum of three years. Some MFDs might have a very high initial cost but it might give you the best value for money over a period three years as compared to a budget MFD, which has a low initial cost, but run a high running cost for the subsequent years.



## All DSLRs aboard the eye3

It's an ambitious project that will help your DSLR take flight. Just click the link below  
<http://engt.co/AmTzAy>

## World's largest videogame controller

Students in the Netherlands have created the world's largest videogame controller. Wonder how it would be to play using it?  
<http://bit.ly/zFv4wM>

**MFD comparison test**

change the darkness level of the prints, etc. And since the MFD also comes with fax support you also get a phonebook (Most of the laser MFDs in our comparison allowed you to control everything from the control panel itself, an important highlight).

While most of the Laser MFDs come with a two-line LCD screen, the Canon MF4420w has a 5-line LCD, this makes it very easy to read and navigate the UI, which is easy to use.

Another very common feature with laser MFDs is the manual feed slot – for unusual paper sizes – envelopes, etc. All the MFDs from Brother, Panasonic and Dell support this feature.

### Ease of use

Installing the toner cartridges is a very easy affair on all the MFDs and shouldn't pose a problem for anyone.

The keys on the control panel of the HP Laserjet Pro M1213NF MFP feel a bit too stiff to press. Surprisingly, the HP also lacks

## CONTROL PANEL

Look for MFDs with a control panel that allows you to perform all the tasks from the printer itself. This makes the MFD extremely convenient and quick to use

a dedicated scan button on the control panel. This means you'll have to rely on the PC to take scans. In the Canon MF4420w setting up the Wi-Fi is quite easy but entering the passcodes is a challenge, since it doesn't come with a physical keyboard. We had to use the four-way scroll button to scroll to each letter and then select it – it was a pain, to say the least.

With the Panasonic KX-MB1520, the UI isn't all that user-friendly. Lack of a back button makes it difficult to use the MFD until you get a hang of it. The overall interface is a bit difficult for the initial setup but once done you should be good to go. The paper loading tray isn't all that smooth when we tried to load it – it may become a cumbersome task over time.

The Canon MF3010 has a very unique con-



**Epson K300:** Hands down the best built MFD we saw during the course of this test

trol panel; it has a 7 Segment (1 digit) LED that does the work of a screen (But since there's nothing to display on the screen apart from letters, it becomes really difficult to use the MFD out of the box). Using the control panel will need you to thoroughly go through the entire manual before using it. Even with this Canon MFD you find that the a dedicated scan button is missing on the control panel.

Among the rest of the MFDs in the bunch, the Epson MX14 and the Dell 1135n frequently heated up. The problem with the Dell 1135n was that it always performed a warm-up program if we were to use it even after a short idle time. This got annoying after a while.

### Winner

According to our tests, Epson AcuLaser CX17NF wins the **Best Performer** award. The Epson CX17NF was the only colour laser LED MFD we

received and as none of the other brands had a laser LED colour MFD to offer under 20K, the Epson AcuLaser CX17NF had a massive advantage.

With the best price to performance ratio the Epson MX14, wins our **Best Buy** award. It gave much better performance than the Epson AcuLaser CX17NF on most tests, and was much faster to boot. ■



**Epson AcuLaser CX17NF:** Holds the distinction of being the only LED colour MFD under ₹20,000 in this test



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**Quad core Power**

LG's X3 smartphone revealed. Comes with ICS powered by a quad-core processor

**iPhone without camer**

iPhone 4S without camera is now available in Singapore. Meant for armed forces personnel



Never has the activity of buying a high-end smartphone been this tough. We help you make the smart choice

# Bursting with smartness

Vishal Mathur  
vishal.mathur@thinkdigit.com

Buying a smartphone is an exciting yet exhausting experience. And in some cases, considerably long drawn. Not because of the waning willingness to buy as time goes by, but because the choice becomes even more complicated by the day. Particularly if the spending is upwards of ₹20,000 for the higher-end and more powerful smartphones.

**Trends of 2011**

All the phones we're testing in this comparison were launched in 2011. The likes of Samsung and LG seemed quite bullish. The former brought the real challenger to the iPhone with its Galaxy SII and the hybrid device – the Galaxy Note. The latter was the first to bring a dual core Android phone as well as an Android-based 3D phone to the Indian market. HTC, it seemed, tried to do a little too much, and it showed in the likes of the Sensation and the Evo 3D, good products, but not

great. It has been hard at work, though, a testimony to which is the amazing Sensation XE. RIM relied on numbers to stay in the smartphone market. Nokia, for the most part of the year, struggled with the Symbian^3 based smartphones. We even have a couple of those warriors in this comparison. But with the Lumia 800 and the delicious Windows Mango combination, things might finally be falling into place for Nokia (and Microsoft). And yes, there was the annual iPhone update which sent everyone in a wild tizzy.

**Comparison 2012**

Considering the wide price bracket we were looking at initially, we decided to divide the phones into two categories, ₹20,000 to ₹29,999 and ₹30,000 and above. Designed to make the results more valuable to you, depending on the budget you may have for the next smartphone purchase. Note that, this division has been done taking into account the current approximate market price of the phones, since there is a huge difference between the box prices and the actual market prices of



## Lumia battery fix

Nokia rolling out battery issue fix for Lumia 800 smartphone

## ICS Zooms in

Motorola has begun rolling out ICS update for Xoom tablets in the U.S.

## High-end smartphones

phones in some cases. So let's begin with the first category.

### ₹20,000 and ₹29,999

Kicking things off is the BlackBerry Curve 9380. The touch-screen-only form factor comes to the Curve series, looking a lot like the younger cousin of the much more expensive Torch 9860. Despite not being the most powerful of the lot, with an 806MHz processor, the Curve doesn't disappoint as far as the overall system performance is concerned. Apps open smoothly, and it only feels a bit of a strain when you have more than five apps open in the background. It is possibly one of the better-built smartphones, which feels a lot more expensive than it actually is. Great for the customer.



BlackBerry Curve 9380

The Nokia X7 is a phone from the future, at least it looks like that. It has an edgy design, but fails to impress past that. Having

said that, we must say that the fault isn't the hardware per se, but the dated Symbian OS. If you still like the old school charm and would stick with Symbian, the performance offered by the X7 isn't bad. Or you could just buy the N8 for a little bit more money. Not only do you get a fabulous 12MP camera, but a build quality that's equally brilliant if not this futuristic. The Symbian Anna update did wonders to the N8 performance package. While the X7 has a bigger display, the N8's 3.5-inch display isn't uncomfortable to use in any way. But there's no getting away from the fact

that the OS isn't slick and feels considerably dated, both in UI and architecture.

The phone we're about to pick up next, the Sony Ericsson Xperia Play, has been around for some time now. However, there still isn't a phone around that looks quite like this, or offers the experience the Play does. Lovingly known as the PlayStation phone in the days prior to its offi-



Nokia N7

## HOW WE TESTED

**T**he smartphone is an extremely interesting device category to test, not only because of the diversity (hardware, operating systems, customisations, feature sets, etc.) but also because it seems to be the most vibrant – as in, the sheer pace at which new phones, OS updates and hardware arrives in the market. The traditional estimate that a phone normally lasts 1 year before falling into the outdated category doesn't hold true anymore.

To test the smartphones that we had on our desk, there was a similar amount of diverse testing required at our end before we could really adjudge a winner.

### Benchmarks

First off, we ran a series of benchmarks to get a set of numbers allowing us to directly compare the performance of all the devices – processor, graphics, storage and even the web browser. Each platform largely has its own set of benchmarks, with only the PeaceKeeper Browser benchmark being truly cross platform. We have given equal weightage to all benchmark scores, so as to not put the other platforms at a disadvantage. We ran benchmarks on Android (Quadrant, AnTuTu, LinPack and GLBenchmark), iOS (Linpack

and GLBenchmark), Windows Phone 7.5 (WP Bench and MultiBench) and the cross platform Peacekeeper benchmark.

Call quality was tested on all phones in three different signal zones – full signal, 50 per cent signal and very low signal, usually 1-2 bars. Points are reduced for every call drop, voice echo and audio break situations and also when audio is completely lost but the call isn't dropped.

The built-in speaker was scored on the clarity and loudness parameters, both for calls and multimedia playback. The video playback test, also a part of the multimedia test, was a combination of the display quality (brightness, colour depth, sharpness and black level depth) and the processor/RAM's ability to play back the video files smoothly. In all of these being high-end smartphones, the power package was never the bottleneck in video playback, which laid the emphasis more on the doorstep of the display.

### Battery life

The battery life test on all the smartphones was done to see how long the phone lasts on a single charge, from full charge to full discharge. The usage included video playback, web browsing and IM chats, quite a bit of gaming and some voice calls, all with either 3G or Wi-Fi connected throughout.

### Included features

The hardware package does have considerable amount of weightage to it. More points are given to dual-core processors. Every display type has been allocated a preset number of points to it, and the phones were scored according to those guidelines. The camera gets points for the mega-pixel numbers, as well as additional features such as HDR, image stabilisation, video stabilisation and 3D Panorama Shot. Camera performance is rated on the basis of the quality of pictures and video – clarity, sharpness, noise (or the lack of it), colour depth, fast motion fluidity and the amount of tweaking the settings options offer.

### OS Matters

We believe that the OS does have a huge bearing on the overall package that a smartphone offers – performance, apps, tariff etc. For example- most apps (WhatsApp, Facebook etc.) on BlackBerry won't work if you don't have a full Internet BlackBerry plan activated. However, there are no such limitations on the other platforms. There are a lot of other factors attached to an OS – app ecosystem, amount of customization possible, the features and tweaks possible all have a bearing on this rating. ■

## TRAI calls for transparency

TRAI asks Indian celloos to update tariff details on their web sites and points of sale

## Is it really coming?

BlackBerry Playbook OS 2.0 expected to roll out on 17th February



Nokia N8

cial launch, the Play seamlessly brings together the Android smartphone and the controller of the PS3. While the phone is pretty standard, gaming on it is taken to the next level. With the dedicated controller, the gaming experience comes very close to what you get on the dedicated portable gaming console – the PlayStation Portable. What limits it is the OS itself, which really isn't a gaming platform at all. More than that, the Xperia Play is a definite head turner at social gatherings, and you will not have to pay a lot for it.

Ah, the first of the Windows Phone Mango devices – the HTC Radar. It seems to have

everything mixed in generous quantity, performance, build quality and a price that makes this a very decent mid-range WP7.5 device. The build quality follows a pattern very similar to the ones we've seen along the way on multiple devices, namely the HTC Legend and the HTC Flyer tablet – the unibody design with a plastic portion that can be opened to access the SIM slot and battery slots. The mixture of silver and white does make it look a bit bland, but you wouldn't really care because Windows Phone OS is absolutely brilliant post the Mango update. While the 3.8-inch S-LCD display doesn't really match up to the likes of the Super AMOLED on the much less expensive Samsung Omnia W, it isn't a disappointment by any stretch of imagination. There is 8GB internal storage, with no slot for memory expansion. If you want a Windows Phone in this price budget, the HTC Radar should definitely be on the shortlist.

If you've forgotten about it, we would like to re-introduce the BlackBerry Bold 9780, fondly known as the Bold 3 when it was launched last year. This is the only non-touchscreen device on our comparison test this time around. However, for around ₹22,000, the Bold 9780 does offer a very solid product that has stood the test of time. Yes, it isn't the most powerful package in the modern day stakes, but you essentially get a Bold series smartphone, and not have to pay a lot for it. RIM hasn't said anything about

whether this phone will get the OS 7 update, but even with the OS 6, it's definitely worth a consideration. Will appeal to students or the young professionals, who need BBM and mails on the move.

Bewildering as it is, the Bold 9790 (incidentally not the Bold 4 or anything like that) makes



HTC Radar

us wonder as to whether the lines between the Bold and Curve series of smartphones are actually blurring? We say this because the Bold 9790 doesn't feel like a higher end Bold smartphone at all. The plasticity feel is all too dominant, and does become even more so when you look at the price tag. Performance is impressive, thanks to the combination of a 1 GHz processor and the less resource hungry OS 7. However, the phone doesn't feel as high quality to hold, as you would have hoped for after paying lots of moolah.

What we have up next is the first dual core smartphone to arrive in the Indian market, the LG Optimus 2X. Incidentally, this is the most inexpensive dual

core phone around as well. The build quality is quite okay, but the most impressive is the bright display. If you aren't careful about turning it down, your eyes will feel the strain. The dual core processor isn't a beast in terms of the experience on offer. You won't even notice the performance boost, but will appreciate the extra grunt when opening applications and playing games. Sadly though, the Optimus 2X is still stuck on Android 2.2, but LG says the ICS update will arrive in the second quarter of 2012. Might not be a bad deal.

The BlackBerry Torch 9860 is very different from the traditional BlackBerry look. With a 3.7-inch display, the Torch is essentially aimed at the user who is enticed by the touchscreen experience of an Android, but wouldn't want to give up the BlackBerry ecosystem. Having said that, the real niggle with OS 7 is that it's designed to work on touchscreen-only phones as well as phones that have a QWERTY keypad. And that means that the experience on a touchscreen phone isn't as fluid as that on an Android or the iOS.

Nokia's Lumia 800 is one brilliant phone. The UI is slick,



Sony Ericsson Xperia Play



BlackBerry Bold 9790



## Julian Assange to host talk show

Celebrated whistleblower moves on from Wikileaks, wants to start his own talk show focusing on the future <http://politi.co/zqY88E>

responds smoothly and is built solidly yet with a generous dose of good looks. The display offers amazing black levels. With the arrival of Windows Phone 7.5 (Mango), the fortunes of Microsoft's smartphone OS have completely turned around, for the better. The update has improved the OS considerably. So much so that we believe it will give Android a run for its money in 2012. Having experienced this OS running very smoothly on phones that are not very powerful, we believe that this is the best chance for Microsoft to get a march on Android with more (and better to use) phones at a price under ₹20,000 as well.



LG Optimus 2X P990

Not quite the sensation we had hoped this would be. Yes, we are talking about the HTC Sensation, and it was a disappointment, the moment you moved beyond the gorgeous looks and an amazingly premium feel. The phone was besieged with network issues, and the Wi-Fi had the grip of death issue. This was the final nail in the coffin of an otherwise good phone that didn't let us down in terms of the Android experience. The 4.3-inch display is perfect for someone who wants to be able to type messages

quickly, and browse a web page with relative comfort.

The camera specs on the Arc S are by far the best on paper – image stabilisation, video stabilisation and the ability to take a 3D Panorama Shot. Luckily, the resultant images and pictures are very good. 3D Panorama images are good as well, with the only issue being the panning speed, which takes some effort to get right. However, it does have issues with the network, and we won't recommend this phone.



### Winner

Only the Best Buy crown was awarded in this ₹20,000 to ₹29,999 smartphone category, since the overall performance crown went to a smartphone that didn't fall in the specified price bracket. The LG Optimus 2X P990 is the Best Buy if you're looking for a sub-30k smartphone. It simply has the best combination of hardware features and performance at the given price, which is still unbeatable. If you can't muster up enough cash to buy any of the newer, sexier smartphones launched in the last couple of months. Noteworthy mentions include the Sony Ericsson Xperia Arc S and the Nokia Lumia 800, a classy Windows Phone 7.5 device.

### ₹30,000 and above:

This is where the competition becomes even tougher.



Nokia Lumia 800

What we witness in this category is a battle of the dual core processors, barring one phone – the BlackBerry Bold Touch 9900. And yes, this price bracket also sees the introduction of the big smartphone – the 5-inch display and above phones.

We start things in this category with the Samsung Galaxy S II. If we discount the Galaxy Note from the discussion for a few minutes, this is the real Android challenger to the iPhone. The performance is absolutely mind-blowing – the best performance of an Android device by far, this side of a 5-inch



Samsung Galaxy S II



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Raipur - 0771- 329 3674, Ranchi - 0651- 324 4199,  
Secunderabad - 040- 2789 4847.

## Phones between Rs 20000 and Rs 29999

| Phone Model                                                 | Blackberry Curve 9380   | Nokia X7                               | Blackberry Bold 9780                              | LG Optimus 2X P990                                  | Nokia N8                               | Sony Ericsson Xperia Play                    | HTC Radar                                   | Blackberry Bold 9790          | Sony Ericsson Xperia Arc S                   |  |
|-------------------------------------------------------------|-------------------------|----------------------------------------|---------------------------------------------------|-----------------------------------------------------|----------------------------------------|----------------------------------------------|---------------------------------------------|-------------------------------|----------------------------------------------|--|
| <b>Current Street Prices (Rs)</b>                           | <b>20400</b>            | <b>20700</b>                           | <b>22000</b>                                      | <b>22000</b>                                        | <b>22500</b>                           | <b>23000</b>                                 | <b>23990</b>                                | <b>26450</b>                  | <b>27000</b>                                 |  |
| <b>MRP/ Box Price (Rs)</b>                                  | <b>20990</b>            | <b>22829</b>                           | <b>24990</b>                                      | <b>27815</b>                                        | <b>23867</b>                           | <b>32964</b>                                 | <b>23990</b>                                | <b>27490</b>                  | <b>27290</b>                                 |  |
| <b>Test Scores</b>                                          |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Performance                                                 | 14.0                    | 12.7                                   | 15.5                                              | 20.8                                                | 15.1                                   | 17.6                                         | 18.7                                        | 13.8                          | 20.2                                         |  |
| Features                                                    | 11.4                    | 10.0                                   | 15.0                                              | 18.7                                                | 10.6                                   | 16.5                                         | 17.1                                        | 16.5                          | 22.0                                         |  |
| Design                                                      | 20.1                    | 20.3                                   | 18.8                                              | 22.1                                                | 20.3                                   | 21.6                                         | 22.8                                        | 19.7                          | 21.3                                         |  |
| <b>TOTAL SCORE</b>                                          | <b>45.5</b>             | <b>42.9</b>                            | <b>49.2</b>                                       | <b>61.5</b>                                         | <b>46.1</b>                            | <b>55.7</b>                                  | <b>58.6</b>                                 | <b>50.0</b>                   | <b>63.5</b>                                  |  |
| <b>Physical Specs</b>                                       |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Form Factor                                                 | Bar                     | Bar                                    | Bar                                               | Bar                                                 | Bar                                    | Bar                                          | Bar                                         | Bar                           | Bar                                          |  |
| Dimensions (L x W x H) in mm                                | 109 x 60 x 11.2         | 119.7 x 62.8 x 11.9                    | 109 x 60 x 14                                     | 123.9 x 63.2 x 10.9                                 | 113.5 x 59.1 x 12.9                    | 119 x 62 x 16                                | 120.5 x 61.5 x 10.9                         | 110 x 60 x 11.4               | 125 x 63 x 8.7                               |  |
| Weight (in grams)                                           | 98                      | 146                                    | 122                                               | 139                                                 | 135                                    | 175                                          | 137                                         | 107                           | 117                                          |  |
| 3G Network Bands                                            | HSDPA 850 / 1900 / 2100 | HSDPA 850 / 900 / 1700 / 1900 / 2100   | HSDPA 850 / 1900 / 2100 / HSDPA 900 / 1700 / 2100 | HSDPA 900 / 1900 / 2100                             | HSDPA 850 / 900 / 1700 / 1900 / 2100   | HSDPA 900 / 2100                             | HSDPA 900 / 2100                            | HSDPA 850 / 1900 / 2100 / 800 | HSDPA 900 / 2100                             |  |
| Resolution (pixels)                                         | 360 x 480               | 640 x 360                              | 480x360                                           | 480 x 800                                           | 360 x 640                              | 480 x 854                                    | 480 x 800                                   | 480 x 360                     | 480 x 854                                    |  |
| Size (inches)                                               | 3.2                     | 4                                      | 2.4                                               | 4                                                   | 3.5                                    | 4                                            | 3.8                                         | 2.45                          | 4.2                                          |  |
| Type                                                        | TFT                     | AMOLED with Gorilla Glass              | TFT                                               | IPS LCD with Gorilla Glass                          | AMOLED with Gorilla Glass              | LED LCD                                      | S-LCD with Gorilla Glass                    | TFT                           | LED LCD                                      |  |
| Battery Rating (mAh)                                        | 1230                    | 1200                                   | 1500                                              | 1500                                                | 1200                                   | 1500                                         | 1520                                        | 1230                          | 1500                                         |  |
| RAM (in MB)                                                 | 512                     | 256                                    | 512                                               | 512                                                 | 512                                    | 512                                          | 512                                         | 768                           | 512                                          |  |
| SoC (CPU with GPU, Chipset)                                 | N.A.                    | ARM 11 processor with Broadcom BCM2727 | Marvell Tavor PXA930                              | ARM Cortex-A9 with ULP GeForce GPU, Tegra 2 chipset | ARM 11 processor with Broadcom BCM2727 | Qualcomm MSM 8255 Snapdragon with Adreno 205 | Qualcomm MSM8255 Snapdragon with Adreno 205 | Marvell Tavor MG1             | Qualcomm MSM8255T Snapdragon with Adreno 205 |  |
| CPU Clock speed (in MHz/ GHz)                               | 806 MHz                 | 680MHz                                 | 624 MHz                                           | 1GHz                                                | 680 MHz                                | 1 GHz                                        | 1 GHz                                       | 1GHz                          | 1.4 GHz                                      |  |
| No. of CPU cores                                            | 1                       | 1                                      | 1                                                 | 2                                                   | 1                                      | 1                                            | 1                                           | 1                             | 1                                            |  |
| Operating System (Tested with)                              | Blackberry OS 7         | Symbian Anna                           | Blackberry OS 6                                   | Android 2.2                                         | Symbian Anna                           | Android 2.3.4                                | Windows Phone 7.5                           | Blackberry OS 7               | Android 2.3.4                                |  |
| Battery life in hours                                       | 5                       | 5                                      | 6                                                 | 8                                                   | 6                                      | 6                                            | 8                                           | 5                             | 7                                            |  |
| GPS (Y/N)                                                   | Y                       | Y                                      | Y                                                 | Y                                                   | Y                                      | Y                                            | Y                                           | Y                             | Y                                            |  |
| <b>Connectivity</b>                                         |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Browsing (GPRS/EDGE/3G)                                     | Y / Y / Y               | Y / Y / Y                              | Y / Y / Y                                         | Y / Y / Y                                           | Y / Y / Y                              | Y / Y / Y                                    | Y / Y / Y                                   | Y / Y / Y                     | Y / Y / Y                                    |  |
| 3G max speed (in Mbps)                                      | 14.4                    | 10.2                                   | 14.4                                              | 10.2                                                | 10.2                                   | 7.2                                          | 14.4                                        | 7.2                           | 14.4                                         |  |
| Connectivity (WiFi/Bluetooth/IR/USB)                        | Y / Y / N / Y           | Y / Y / N / Y                          | Y / Y / N / Y                                     | Y / Y / N / Y                                       | Y / Y / N / Y                          | Y / Y / N / Y                                | Y / Y / N / Y                               | Y / Y / N / Y                 | Y / Y / N / Y                                |  |
| Bluetooth Version/A2DP support                              | 2.1 / Y                 | 3.0 / Y                                | 2.1 / Y                                           | 2.1 / Y                                             | 3.0 / Y                                | 2.1 / Y                                      | 2.1 / Y                                     | 2.1 / Y                       | 2.1 / Y                                      |  |
| <b>Camera</b>                                               |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Camera Specs (Mega Pixels)                                  | 5                       | 8                                      | 5                                                 | 8                                                   | 12                                     | 5                                            | 5                                           | 5                             | 8                                            |  |
| Video Resolution                                            | VGA                     | 1280 x 720                             | 640 x 480                                         | 1920 x 1080                                         | 1280 x 720                             | 800 x 480                                    | 1280 x 720                                  | VGA                           | 1280 x 720                                   |  |
| High Dynamic Range (HDR)                                    | N                       | N                                      | N                                                 | N                                                   | N                                      | N                                            | N                                           | N                             | N                                            |  |
| Image / Video Stabilization                                 | Y/N                     | N/N                                    | N/N                                               | Y/N                                                 | N/Y                                    | Y/N                                          | Y/N                                         | Y/N                           | Y/Y                                          |  |
| 3D Panorama shot                                            | N                       | N                                      | N                                                 | N                                                   | N                                      | N                                            | N                                           | N                             | Y                                            |  |
| Secondary camera for video chat                             | N                       | N                                      | N                                                 | Y                                                   | Y                                      | Y                                            | Y                                           | N                             | Y                                            |  |
| <b>Performance</b>                                          |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| <b>Signal Reception and Voice Clarity Tests (Out of 10)</b> |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Zone 1/Zone2/Zone3                                          | 8/6/5                   | 8/5/3                                  | 8.5/6.5/5.5                                       | 7.5/6/4                                             | 8/7/4.5                                | 7.5/5.5/4.5                                  | 8/7.5/7                                     | 7.5/6/4.5                     | 8/6/4.5                                      |  |
| Handsfree / Loudspeaker Clarity                             | 7/7                     | 6/6                                    | 7/7                                               | 7/6.5                                               | 6.5/7                                  | 7/7                                          | 7/6.5                                       | 7.5/7                         | 8/7                                          |  |
| Earpiece Clarity / Volume                                   | 7/7                     | 6.5/6.5                                | 7.5/7.5                                           | 7.5/6.5                                             | 7.5/7                                  | 7/6                                          | 6.5/7                                       | 7.5/7.5                       | 8/7.5                                        |  |
| Handsfree / Loudspeaker Volume                              | 6.5/6                   | 6.5/7                                  | 7/7.5                                             | 7/7.5                                               | 7/7                                    | 7.5/6                                        | 6.5/6                                       | 7/7.5                         | 7.5/7                                        |  |
| <b>Imaging and multimedia Tests (Out of 10)</b>             |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Photo Color / Detail                                        | 6.5/6                   | 6.5/6.5                                | 7/6                                               | 7.5/7                                               | 7.5/7                                  | 7/6.5                                        | 7.5/7                                       | 7/6.5                         | 7/6.5                                        |  |
| Captured Video Quality                                      | 5                       | 7                                      | 6                                                 | 7.5                                                 | 6.75                                   | 5.5                                          | 7                                           | 5                             | 7                                            |  |
| Effectiveness of integrated flash                           | 6                       | 7                                      | 7                                                 | 6.5                                                 | 7.25                                   | 5.5                                          | 7                                           | 6                             | 6                                            |  |
| Music Quality loudspeaker / handsfree                       | 6/6.5                   | 5.5/6                                  | 6.5/7                                             | 5.5/7                                               | 6.5/7                                  | 6/6.5                                        | 6.5/7                                       | 5/6.5                         | 6.5/7.5                                      |  |
| <b>Display Rating (Out of 10)</b>                           |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Crispness / Colour / Contrast                               | 7/6/7                   | 6.5/6/5.5                              | 7.5/6/7                                           | 8/7.5/7.5                                           | 7/7/7                                  | 7/7.25/7                                     | 8.5/7.5/7                                   | 7/6.5/7                       | 7.5/6.5/6.5                                  |  |
| Font rendition /                                            | 7                       | 6                                      | 6.5                                               | 7                                                   | 7.25                                   | 7                                            | 7.5                                         | 7.5                           | 7.5                                          |  |
| Legibility in bright sunlight                               | 7.5                     | 5                                      | 6                                                 | 6                                                   | 6.75                                   | 7.25                                         | 6.5                                         | 7.5                           | 7                                            |  |
| Video playback                                              | 6.5                     | 6                                      | 5.5                                               | 8                                                   | 7.5                                    | 7                                            | 7                                           | 6                             | 7                                            |  |
| <b>Benchmarks</b>                                           |                         |                                        |                                                   |                                                     |                                        |                                              |                                             |                               |                                              |  |
| Updates before Benchmark tests                              | No                      | No                                     | No                                                | No                                                  | Yes. 27MB system update                | No                                           | No                                          | No                            | Yes. 120MB system update                     |  |
| Quadrant / AuTuTu                                           | -                       | -                                      | -                                                 | 2626/4331                                           | -                                      | 1404/2055                                    | -                                           | -                             | 2027/3578                                    |  |
| LinPack (single/multi thread)                               | -                       | -                                      | -                                                 | 40.1/46.2                                           | -                                      | 38.7/37.2                                    | -                                           | -                             | 44.71/42.03                                  |  |
| Peacekeeper web browser test                                | 0                       | 0                                      | 0                                                 | 206                                                 | 53                                     | 161                                          | 0                                           | 0                             | 189                                          |  |
| MultiBench Memory/CPU                                       | -                       | -                                      | -                                                 | -                                                   | -                                      | -                                            | 0.18/0.48                                   | -                             | -                                            |  |
| WPBench                                                     | -                       | -                                      | -                                                 | -                                                   | -                                      | -                                            | 80.27                                       | -                             | -                                            |  |



## Phones above Rs 30,000

|  | Blackberry Torch 9860             | Nokia Lumia 800                                         | HTC Sensation                                           | Samsung Galaxy S II                                                  | LG Optimus 3D                                                                 | Blackberry Bold Touch 9900          | HTC Sensation XE                                        | Samsung Galaxy Note                      | HTC Evo 3D                                        | Motorola Razr XT910                                                | Apple iPhone 4S                          |
|--|-----------------------------------|---------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------|------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------|------------------------------------------|
|  | <b>28000</b><br><b>28490</b>      | <b>28990</b><br><b>29999</b>                            | <b>29200</b><br><b>30700</b>                            | <b>30200</b><br><b>30498</b>                                         | <b>32000</b><br><b>36740</b>                                                  | <b>32000</b><br><b>32490</b>        | <b>32350</b><br><b>33990</b>                            | <b>32990</b><br><b>34990</b>             | <b>33000</b><br><b>35990</b>                      | <b>34990</b><br><b>35990</b>                                       | <b>44500</b><br><b>44500</b>             |
|  | 15.6                              | 20.3                                                    | 18.2                                                    | 25.2                                                                 | 21.4                                                                          | 14.8                                | 21.3                                                    | 26.7                                     | 19.7                                              | 22.0                                                               | 22.3                                     |
|  | 17.6                              | 16.1                                                    | 20.0                                                    | 21.9                                                                 | 19.5                                                                          | 17.2                                | 20.6                                                    | 22.1                                     | 18.7                                              | 21.9                                                               | 21.1                                     |
|  | 20.6                              | 24.0                                                    | 25.2                                                    | 23.7                                                                 | 23.1                                                                          | 24.2                                | 25.5                                                    | 25.8                                     | 24.8                                              | 22.4                                                               | 25.1                                     |
|  | <b>53.8</b>                       | <b>60.4</b>                                             | <b>63.3</b>                                             | <b>70.8</b>                                                          | <b>63.9</b>                                                                   | <b>56.1</b>                         | <b>67.4</b>                                             | <b>74.6</b>                              | <b>63.3</b>                                       | <b>66.3</b>                                                        | <b>68.5</b>                              |
|  | Bar<br>120 x 62 x<br>11.5<br>135  | Bar<br>116.5 x 61.2<br>x 12.1<br>142                    | Bar<br>126.1 x 65.4<br>x 11.3<br>148                    | Bar<br>125.3 x 66.1<br>x 8.5<br>116                                  | Bar<br>128.8 x 68 x<br>11.9<br>168                                            | Bar<br>115 x 66 x<br>10.5<br>130    | Bar<br>126.1 x 65.4<br>x 11.3<br>151                    | Bar<br>146.9 x 83<br>x 9.7<br>178        | Bar<br>126 x 65 x<br>12.1<br>170                  | Bar<br>130.7 x 68.9<br>x 7.1<br>127                                | Bar<br>115.2 x 58.6<br>x 9.3<br>140      |
|  | HSDPA 900 /<br>1700 / 2100        | HSDPA 850 /<br>900 / 1900 /<br>2100                     | HSDPA 900 /<br>1700 / 2100                              | HSDPA 850 /<br>900 / 1900 /<br>2100                                  | HSDPA 900 /<br>1900 / 2100                                                    | HSDPA 850 /<br>1900 / 2100<br>/ 800 | HSDPA 900 /<br>1700 / 2100                              | HSDPA 850 /<br>900 / 1900 /<br>2100      | HSDPA 900<br>/ 1700 / 2100                        | HSDPA 850 /<br>900 / 1900 /<br>2100                                | HSDPA 850 /<br>900 / 1900 /<br>2100      |
|  | 480 x 800<br>3.7                  | 480 x 800<br>3.7                                        | 540 x 960<br>4.3                                        | 480 x 800<br>4.3                                                     | 480 x 800<br>4.3                                                              | 640 x 480<br>2.8                    | 540 x 960<br>4.3                                        | 1280 x 800<br>5.3                        | 540 x 960<br>4.3                                  | 540 x 960<br>4.3                                                   | 640 x 960<br>3.5                         |
|  | TFT                               | AMOLED<br>with Gorilla<br>Glass                         | S-LCD QHD                                               | Super<br>AMOLED<br>Plus with<br>Gorilla Glass                        | 3D LCD                                                                        | TFT                                 | S-LCD QHD                                               | Super<br>AMOLED<br>with Gorilla<br>Glass | 3D LCD                                            | Super<br>AMOLED<br>with Gorilla<br>Glass                           | LED IPS (Retina<br>Display)              |
|  | 1230<br>768                       | 1450<br>512                                             | 1520<br>768                                             | 1650<br>1024                                                         | 1500<br>512                                                                   | 1230<br>768                         | 1730<br>768                                             | 2500<br>1024                             | 1730<br>1024                                      | 1780<br>1024                                                       | 1432<br>512                              |
|  | Qualcomm<br>Snapdragon<br>MSM8655 | Qualcomm<br>MSM8255<br>Snapdragon<br>with Adreno<br>205 | Qualcomm<br>MSM8260<br>Snapdragon<br>with Adreno<br>220 | ARM Cortex-<br>A9 with<br>PowerVR<br>SGX540<br>GPU, Orion<br>chipset | ARM Cortex-<br>A9 with<br>PowerVR<br>SGX540<br>GPU, TI<br>OMAP4430<br>chipset | QC 8655                             | Qualcomm<br>MSM8260<br>Snapdragon<br>with Adreno<br>220 | ARM Cortex-<br>A9 with Mali-<br>400 MP   | Qualcomm<br>MSM8660<br>chipset with<br>Adreno 220 | Cortex<br>A9 with<br>PowerVR<br>SGX540, TI<br>OMAP 4430<br>chipset | Apple A5,<br>PowerVR<br>SGX543MP2<br>GPU |
|  | 1.4 GHz<br>1                      | 1.4 GHz<br>1                                            | 1.2 GHz<br>2                                            | 1.2 GHz<br>2                                                         | 1 GHz<br>2                                                                    | 1.2 GHz<br>1                        | 1.5 GHz<br>2                                            | 1.4 GHz<br>2                             | 1.2 GHz<br>2                                      | 1.2 GHz<br>2                                                       | 1 GHz<br>2                               |
|  | Blackberry<br>OS 7                | Windows<br>Phone 7.5                                    | Android 2.3                                             | Android 2.3.3                                                        | Android 2.2                                                                   | Blackberry<br>OS7                   | Android<br>2.3.4                                        | Android 2.3.5                            | Android OS,<br>v2.3 (Ginger-<br>bread)            | Android 2.3.5                                                      | Apple iOS 5.0.1                          |
|  | 7<br>Y                            | 9<br>Y                                                  | 5<br>Y                                                  | 8<br>Y                                                               | 7<br>Y                                                                        | 6<br>Y                              | 6<br>Y                                                  | 11<br>Y                                  | 6<br>Y                                            | 6<br>Y                                                             | 8<br>Y with GLONASS                      |
|  | Y / Y / Y<br>14.4                 | Y / Y / Y<br>14.4                                       | Y / Y / Y<br>14.4                                       | Y / Y / Y<br>21                                                      | Y / Y / Y<br>7.2                                                              | Y / Y / Y<br>14.4                   | Y / Y / Y<br>14.4                                       | Y / Y / Y<br>14.4                        | Y / Y / Y<br>14.4                                 | Y / Y / Y<br>14.4                                                  | Y / Y / Y<br>14.4                        |
|  | Y / Y / N / Y<br>2.1 / Y          | Y / Y / N / Y<br>2.1 / Y                                | Y / Y / N / Y<br>3.0 / Y                                | Y / Y / N / Y<br>3.0 / Y                                             | Y / Y / N / Y<br>2.1 / Y                                                      | Y / Y / N / Y<br>2.1 / Y            | Y / Y / N / Y<br>3.0 / Y                                | Y / Y / N / Y<br>2.1 / Y                 | Y / Y / N / Y<br>3.0 / Y                          | Y / Y / N / Y<br>4.0 / Y                                           | Y / Y / N / Y<br>4.0 / Y                 |
|  | 5                                 | 8                                                       | 8                                                       | 8                                                                    | 5                                                                             | 5                                   | 8                                                       | 8                                        | 5                                                 | 8                                                                  | 8                                        |
|  | 1280 x 720                        | 1280 x 720                                              | 1920 x 1080                                             | 1920 x 1080                                                          | 1920 x 1080<br>(2D) and<br>1280 x 720<br>(3D)                                 | 1280 x 720                          | 1920 x 1080                                             | 1920 x 1080                              | 1280 x 720<br>(2D) and 1280<br>x 720 (3D)         | 1920 x 1080                                                        | 1920 x 1080                              |
|  | N                                 | N                                                       | N                                                       | N                                                                    | N                                                                             | N                                   | N                                                       | N                                        | N                                                 | N                                                                  | Y                                        |
|  | Y/N                               | N/Y                                                     | Y/N                                                     | Y/N                                                                  | Y/Y                                                                           | Y/N                                 | Y/N                                                     | Y/N                                      | N/N                                               | Y/N                                                                | Y/Y                                      |
|  | N                                 | N                                                       | N                                                       | N                                                                    | N                                                                             | N                                   | N                                                       | N                                        | N                                                 | N                                                                  | N                                        |
|  | N                                 | N                                                       | Y                                                       | Y                                                                    | Y                                                                             | N                                   | Y                                                       | Y                                        | Y                                                 | Y                                                                  | Y                                        |
|  | 8/6.5/5<br>7/7                    | 7/5.5/4.5<br>7.5/7.5                                    | 6/5/4<br>6.5/6                                          | 8.5/7.5/5.5<br>7/7                                                   | 7/6/5<br>8/6                                                                  | 7/6/5<br>6.5/6                      | 8.5/7.5/5.5<br>7/7                                      | 8/6/5<br>7.5/7                           | 7/6/5<br>7/6.5                                    | 7.5/6/5<br>7/7                                                     | 7/6/5<br>8/7.5                           |
|  | 7.5/7.5<br>7.5/7.5                | 6.5/6.5<br>7/7                                          | 7/7<br>7/7                                              | 7.5/8<br>7.5/8                                                       | 7/7.5<br>8/7                                                                  | 7/7<br>7/7                          | 7.5/8<br>7.5/8                                          | 7.5/7.5<br>7/7.5                         | 7.5/7.5<br>8/6.5                                  | 7.5/8<br>7/7.5                                                     | 8/7<br>8/7                               |
|  | 8/4<br>7                          | 5.5/5.5<br>6                                            | 7.5/7<br>7                                              | 7.5/7<br>7.5                                                         | 7.5/7<br>7                                                                    | 7.5/7<br>7                          | 7/7<br>7.5                                              | 7/7.5<br>7                               | 5.5/6<br>6                                        | 7/7<br>7.5                                                         | 7.5/8<br>7.5                             |
|  | 7                                 | 6                                                       | 6                                                       | 6.5                                                                  | 6.5                                                                           | 6                                   | 6.5                                                     | 6.75                                     | 6.5                                               | 6.5                                                                | 7                                        |
|  | 7.5/7.5                           | 6.5/7                                                   | 6/6.5                                                   | 5.5/6.5                                                              | 6.5/7                                                                         | 6/6.5                               | 5.5/6.5                                                 | 6/6                                      | 5.5/7                                             | 6.5/6.5                                                            | 6/7                                      |
|  | 7.5/7/7<br>7.5                    | 8/8/7.5<br>7.5                                          | 7/6.5/7<br>7                                            | 7.5/7.5/8<br>8                                                       | 8/7/7<br>7                                                                    | 7/7.5/7<br>7                        | 7.5/7.5/8<br>8                                          | 8/7.25/7.5<br>7.5                        | 8.5/7.25/6.25<br>8.5                              | 7.5/8/8<br>7                                                       | 8.5/8/8<br>8.5                           |
|  | 7.5<br>7                          | 7<br>7.5                                                | 7<br>7                                                  | 7.5<br>8                                                             | 5.5<br>8                                                                      | 7<br>7.5                            | 7.5<br>8                                                | 7<br>6.5                                 | 4<br>7.5                                          | 6.5<br>7                                                           | 7.5<br>8.5                               |
|  | No                                | No                                                      | Yes. 26MB<br>system<br>update                           | No                                                                   | No                                                                            | Yes. 1MB<br>system<br>update        | No                                                      | No                                       | No                                                | No                                                                 | No                                       |
|  | -                                 | -                                                       | 2148/5021                                               | 3242/5807                                                            | 2759/5355                                                                     | 2725/5728                           | 3726/5854                                               | -                                        | 2042/4843                                         | 2633/6203                                                          | -                                        |
|  | -                                 | -                                                       | 45.66/70.16                                             | 55.32/84.2                                                           | 45.1/73.2                                                                     | 54.72/74.73                         | 59.8/98                                                 | -                                        | 45.1/69.4                                         | 50/74.8                                                            | 131.4/141.27                             |
|  | 0                                 | 145                                                     | 168                                                     | 198                                                                  | 210                                                                           | 307                                 | 302                                                     | 0                                        | 164                                               | 274                                                                | 314                                      |
|  | -                                 | 1.86/6.7                                                | -                                                       | -                                                                    | -                                                                             | -                                   | -                                                       | -                                        | -                                                 | -                                                                  | -                                        |
|  | -                                 | 91.9                                                    | -                                                       | -                                                                    | -                                                                             | -                                   | -                                                       | -                                        | -                                                 | -                                                                  | -                                        |

## Razr sharp

Motorola rolling out performance updates for Razr. Will improve camera performance

## Kindle full screen update

Amazon Kindle Fire gets full screen web browsing capabilities

display size! The display on the SII is a delight to use as well, the Super AMOLED plus. Extremely vivid colours and very bright as well, with the only real niggle (if we nitpick) is that the reds can be a little overbearing. We don't really see this on smartphones, but you have the settings for cool, normal and vivid for color. Wasn't that the domain of flat panel televisions? Battery life is surprisingly good as well. Surprising we say because of the sheer power the SII packs. However, what can certainly be held against the SII is the extremely plasticky build. The idea was to keep the weight down, but for a phone that costs above ₹30,000, this just doesn't seem right. However, the SII offers tremendous value. It is the lowest priced among all phones above ₹30,000 and has a performance only second to the Galaxy Note.

LG Optimus 3D was the first high-end 3D phone to arrive on our shores, and the package is extremely impressive. Admittedly, it isn't very slim, and is definitely on the heavier side. However, packed in are dual cameras for 3D pictures and videos, and a 3D display. To allow users to enjoy the 3D experience straight out of the box, LG have preloaded

a bunch of 3D games, images and videos on the phone. The 3D display was working very well, and the depth that was offered on a 4.3-inch display impressed us. Since this is the "glass-less" version of 3D, there is a convenience bit to it. It is a disappointment of enormous proportions that the Optimus 3D still hasn't been updated beyond Android 2.2, which will definitely put off a few buyers. We believe 3D is a feature that will not yet entice a lot of buyers.

Carrying on with the 3D theme, the other phone is the HTC Evo 3D. It feels better to hold than the Optimus 3D, and the slightly lighter color theme gels well with the tinge of red. There is a dedicated key to switch between 2D and 3D modes. The display isn't as bright as the one



Samsung Galaxy Note

looking BlackBerry device we have seen in a long time. What RIM has done here is made a phone that manages bling and



Sony Ericsson Xperia Arc S

on the Optimus 3D, but handles colours equally well. 3D performance, however, is miles apart. If you remember, we had praised the 3D depth of the LG phone, but the same can't be said for the Evo 3D. The depth definitely wasn't there, and the real annoying thing was there was no preloaded 3D content. At least a few images and videos were critical, since it helps with the 'enjoy out of the box' routine. If a 3D phone is really what you want, we suggest buying the Optimus 3D, since it is better at the unique feature that both phones tout.

There really is no other way of saying this – the Bold Touch 9900 is a very impressive phone. We can confidently say that this is by far the best-

understated elegance, all at once. The 2.8-inch display is a capable touchscreen, and OS 7 performs delightfully on the 1GHz processor. And we haven't come to the best part yet. The QWERTY keypad is by far the best ever on a BlackBerry device, and miles ahead of any QWERTY we have seen in a very long time. Add a good battery life into the mix, and this is the phone to buy. If you want a high-end business device, or a very capable expensive phone to show off to the buddies, this is the Bold you should consider.

HTC Sensation XE is what Sensation should have been in the first place. While the design and dimensions remain like the Sensation, the Beats Audio Special Edition genes are clearly visible, thanks to the red LEDs and the tinge of red at multiple places on the phone. But the real difference is in the power package. While the Sensation had the 1.2GHz version of the Cortex A9 processor, the XE gets a 1.5GHz processor. The resultant performance boost is tremendous. The XE has significantly better benchmark scores, and the UI feels much slicker to use as well. The bigger battery on the XE means it does better than its cousin on that front as well. As we had explained earlier, the Sensation had serious network issues – signal drops and the Wi-Fi grip of death. If you remove the battery cover on the Sensation, all network signals drop out. In the XE, remove the battery cover and the only change is that the network switches from 3G to EDGE networks, but continues working as a phone. The display is the same as the Sensation, but the way HTC Sense responds is very different – way more fluid and responsive on the XE. If you were considering buying the Sensation, we suggest you think about spending a little more and getting the XE instead.

The Razr is back and it hasn't put on any weight. It looks absolutely brilliant, and the build quality is quite classy. How-



HTC Evo 3D



LG Optimus 3D



## 5 million, and going strong

5 million units of Samsung Galaxy SII sold in Korea

## Official Wikipedia App

The official Wikipedia app lands on Android Market

High-end smartphones



HTC Sensation XE

ever, despite having the same 4.3-inch display size as the likes of the Samsung Galaxy SII and the HTC Sensation XE, but somehow feels bigger to hold. Even the likes of the bulkier HTC Evo 3D and the LG Optimus 3D feel smaller in the hand. With a dual core 1.2 GHz processor on board, the OS performance is very good. Super AMOLED display has the Gorilla Glass treatment to it, and we have to say that this phone will be a delight for multimedia consumption. It's a pity the battery life isn't as good as we had hoped it would be. The Razr in its latest avatar is meant for anyone who wants a very sleek phone (admittedly, it doesn't get slimmer than this) with good

performance. It does cost quite a bit, but that may be the price for the added oomph factor.

Everyone thought it would be the iPhone 5. And what emerged was the iPhone 4S. And it definitely wasn't the completely new iPhone people were hoping for. Certainly not, since it retains the same form factor and the display as the iPhone 4. The processor is changed, however, with the Apple A5 dual core clocking at 1GHz. Minimum storage options available start at 16GB now, instead of 8GB earlier. The camera has also been bumped up from 5MP to 8MP, with the ability to record 1080p HD videos. While the 4S has arrived in India not long after the global launch, what goes against it is the price tag.



Motorola Razr XT910



Apple iPhone 4S

### Winner

No prices for guessing the best performing smartphone. The Samsung Galaxy Note wins Best Performer. Is it a phone? Is it a tablet? We don't really care as long as it met expectations, and admittedly, even we were surprised by the device's amazing performance, as was witnessed by the benchmark scores. You will be able to utilize the well spaced out on-screen keypad to type messages comfortably and quickly. The battery life is very good, will last you about 2 days under most usage scenarios which is almost unheard of for an Android device. The stylus may not be used very often, but you can do some interesting stuff with our pictures with it.

Also, the Samsung Galaxy SII is still going strong, and our

pick for the Best Buy smartphone above ₹30k. Despite stiff competition, the SII manages to deliver the best combination of features and performance at an unbeatable price.

When it came to deciding the Editor's Pick, there was a close fight between the HTC Sensation XE and Apple iPhone 4S. But the latter just edged past the Sensation XE in the performance department. Also the improved camera optics, Siri and improvements in the iOS 5 worked in favour of the iPhone 4S due to which it was awarded the Editor's Pick. If you cannot afford the iPhone 4S, the Sensation XE is the next best phone in the higher end category after the Winners. **d**

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## Belle Belle

Nokia is rolling out Symbian Belle update earlier than expected

## Windows 8 tablet requirements

Microsoft documentation has revealed the hardware certification requirements of Windows 8 tablets

# Nokia Lumia 710

Premium sub-20k smartphone running on WP 7.5



## Specifications

**Platform:** Windows Phone 7.5 (Mango); **Processor:** Qualcomm MSM8255 Snapdragon 1.4GHz; **RAM:** 512MB; **Display:** 3.7-inch (480 x 800 pixel); **Storage:** 8GB internal; **Camera:** 5MP, 720p videos; **Battery:** 1300 mAh

## Contact

**Nokia India**

**Phone:** +91 22 3030 3838

**Email:** [www.nokia.co.in](http://www.nokia.co.in)

**Price:** ₹18,999

7.5  
10

Features ..... 7.0  
Performance..... 7.5  
Build Quality ..... 7.5  
Value for Money ..... 8.0

If the Nokia Lumia 800 was an indicator of what Nokia plans to do with its Windows Phone Mango devices, then the future certainly looks bright. The Nokia Lumia 710 is targeted at a consumer, who doesn't wish to spend more than ₹20,000 on a phone, but would love to have a device that feels premium.

## Look & Feel

Straightaway, you know that the Nokia Lumia 710 is thicker and heavier than the Samsung Omnia W. But that doesn't take away the fact that the build quality has a premium feel to it. It doesn't have the unibody design of the Nokia Lumia 800, but the more conventional one - remove back panel to access battery. Three hardware keys - Return, Windows and Search, accompany the 3.7-inch display. There is a choice of two colours - black and white, but you can get a lot of colours for the battery cover.

Flip the phone over and there is the 5MP camera with flash towards the top, and the hands-free speaker towards the bottom. The volume rocker and the camera key are on the right side panel, while the 3.5mm headphone jack is on the top along with the power key and the micro USB slot.

The plastic used is high quality, and we didn't feel any extra depression or rough edges at all.

## Features & Performance

The Nokia Lumia 710 has the same hardware specs as the Samsung Omnia W. The Qualcomm Snapdragon MSM8255 Snapdragon processor clocking

at 1.4GHz powers it, and is paired with 512MB RAM. The performance of Windows Phone 7.5 (Mango) on this hardware was excellent when we reviewed the Omnia W and likewise for the Lumia 710. Probably one of the benefits of not allowing the manufacturer to add extra customization on the phones, which has been Android's Achilles heal.

The display on the Nokia Lumia 710 is a simple LCD, while the Omnia W comes with Super AMOLED display. Both the phones have the Gorilla Glass feature. While the Omnia W takes the lead in terms of brightness and contrast, the Nokia Lumia 710 surprisingly has deeper blacks and the text feels a lot crisper, helping mostly with reading web pages and emails. While we expected the Super AMOLED on the Omnia W to be miles ahead in terms of the overall package, the Nokia Lumia 710's display does have quite a few things going for it.

Windows Phone OS's Metro UI is possibly the most interesting. To see all apps, just flick open the screen on the right. Now you can vertically scroll through all the apps that are installed on the phone. The UI offers very limited options in terms of personalization. The changes you can make are limited to re-arranging tiles, changing accent colour and the colour of the background and changing the lock-screen image.

The 5MP camera is nothing to be very proud about. It takes decent images in bright light, but noisy images when it becomes slightly darker. Even on a sunny day, pictures lack sharpness. The ability to take 720p HD videos seems more like something

designed for the spec sheets, than for actual performance!

If the iOS has Apple's iPod feature built-in, this one has Microsoft's Zune. We still haven't seen a more beautiful presentation of the music collection on any portable device till now!

Surprisingly, the Nokia Lumia 710 has a smaller battery than the Omnia W. And it shows - this one will completely discharge in just over a day, under medium-heavy use.

The Lumia 710, more so when considering the price, should be on your shortlist if you are considering a Windows Phone 7 handset. Its neck to neck with the Samsung Omnia W in terms of overall performance. The Omnia W is lighter and slimmer than the 710. But the 710 has much better display than the Omnia. Its a tough choice, but in the end it ultimately boils down to your preference of the design, brand, colour etc. Read more online: <http://bit.ly/yb06bw>

*Visbal Mathur*

## MORE REVIEWS



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## Notion Ink Adam II

Notion Ink has announced the Adam II, saying it will feature a TI OMAP chipset, Ice Cream Sandwich, and user-customized apps

## FileSonic disables file sharing

In wake of the recent crackdown on Megaupload, FileSonic has disabled its file sharing service

Bazaar

# Amazon Kindle Touch

### The page turner is here

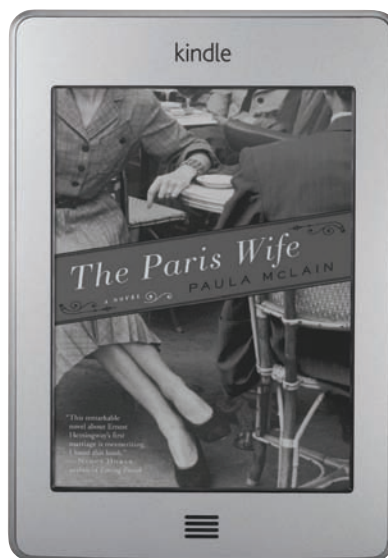
The Kindle Touch is slightly heavier than the Kindle (the plain-Jane edition), but is considerably less bulky than the one with the keyboard. The device has 4GB on-board storage - Amazon says that is good for about 3000 books. On-board is an experimental web browser, and "experimental" for a good reason. Some flash heavy websites do not render properly, but most sites load just fine.

With all the Kindle devices till now, a lot of book lovers missed the feel of actually turning a page. The Kindle Touch brings that back, to a huge extent. Amazon have divided the fields on the display very well - tapping anywhere in the wide margin on the

right side to flip to the next page, or tap anywhere in the thin left margin will flip to the previous page. Alternatively, you can just swipe on the screen like you would swipe a page in a book.

Amazon claims a battery life of about 2 months, with an hour of reading daily. We still haven't been able to drain the battery on our Kindle Touch! It has been with us for two weeks, and despite a couple of hours of reading daily, the battery is slightly above 50 per cent. It had come out of the box with about 60 per cent charge.

For someone who already has a Kindle 3, the Touch isn't



an enticing enough upgrade. But for someone who is looking to buy their first e-book reader, then the Touch is the smartest choice at the moment.

Visbal Mathur

## Specifications

**Display:** 6-inch E-ink, capacitive touchscreen with multi-touch; **Connection type:** Wi-Fi (3G optional); **Add-ons:** experimental web browser, music player, access to the Kindle Store

## Contact

Amazon Global

**Web site:** www.amazon.com

**Price:** \$99 (Wi-Fi only, with special offers) doesn't include of shipping, etc.

8.5/10

|                       |     |
|-----------------------|-----|
| Features .....        | 7.0 |
| Performance.....      | 8.0 |
| Build Quality .....   | 8.5 |
| Value for Money ..... | 8.5 |

# Beetel Magiq Glide

### One level upgrade to a capacitive display

## Specifications

**Platform:** Android 2.2.2;

**Processor:** Qualcomm Snapdragon @ 1GHz; **RAM:** 512 MB; **Display:** 7-inch (480 x 800 pixels); **Storage:** 8GB with microSD slot; **Battery:** 2200 mAh

## Contact

Beetel Teletech Limited

**Email:** customer.care@beetel.in

**Contact:** 01204823500

**Price:** ₹11,999

6.5/10

|                       |     |
|-----------------------|-----|
| Features .....        | 7.0 |
| Performance.....      | 7.0 |
| Build Quality .....   | 6.0 |
| Value for Money ..... | 6.5 |

Undeniable, but true - the Glide looks exactly like its predecessor. Competing against the likes of the Reliance 3G Tab, the Glide comes across as a bulky tablet. The use of metal adds a solid feel. The integrated kickstand is a unique feature we haven't seen on any tablets.

A 1GHz single core processor, coupled with 512MB of RAM, powers the Glide. The OS version

- Android 2.2 remains unchanged. We expected to see at least Android 2.3 that the Reliance 3G Tab comes with. However, the performance of the Glide seems to be slightly better than the Magiq.

The 7-inch touchscreen (480 x 800 pixel) is now the capacitive type. We had criticized the Magiq for having a resistive touchscreen that spoiled the entire tablet experience.

While the display specs remain the same otherwise, the Glide's display seems to be a lot crisper. Text reads better, and images don't

seem bereft of sharpness. The disappointing 2MP cameras are carried forward from the earlier version. The video call camera is heavily dependent on good lighting.

A bit of video viewing, web browsing and half an hour of music in the background had the Beetel MAGIQ running out of battery in about 4 hours.

The Magiq Glide is an alternative to the likes of the Reliance 3G Tab. Performance wise it is same as its predecessor, but the upgrade to a capacitive touchscreen is the best thing that could have happened. However, you are paying extra for something that should've been there in the first place.

Visbal Mathur



**MS Flight to be free-to-play**

A new version of Microsoft's Flight Simulator series will be released this spring for PC

**Note crosses 1 million in sales**

Samsung Galaxy Note crosses 1 million units in sale in 2 months

# Sound Blaster Tactic Sigma

## Sonic boom, literally

**T**his headset is part of Creative's Sound Blaster Tactic series of gaming headsets. They feature such knick-knacks as THX ProStudio technology, a detachable microphone, flat and long cable wires (tangle-free), in-line volume control and the option to use the headset via USB or analog jacks. The build quality is decent but even though it has a steel band inserted into the headband, the plastic on the cups feels a bit flimsy. The cushioning does what it is meant to do and is quite soft. The headset fits snugly over the head, the movable cups and adjustable headband ensure this. However, it can be a bit too snug at times as the pads can be a little too small for some people.



The headset is best used in USB mode. Analog mode works but the volume levels can be a bit too low, even with a decent sound card. USB mode provides a significant boost in volume and the THX ProStudio Desktop software provides you with a lot of control over your audio. The software fea-

tures something called a "crystaliser" for improving voice quality, but it introduces too much noise and can be a bit irritating. In fact, the audio sounds best when all enhancements, except the equaliser of course, are turned off.

Performance-wise the headset is strictly decent. Above average for music but the bass is muddy and there is no punch. Primarily geared to being a gaming headset, it works quite well in that regard. Lack of bass aside, the stereo separation is good and it was easy for us to figure out the location of gunshots in Crysis 2 and COD.

All in all a decent headset and at ₹4,000, it is a good buy for your PC. For better music quality and bass, best look elsewhere.

*Anirudh Regidi*

## Specifications

**Drivers:** 50mm Neodymium magnet driven, **Impedance:** 32ohms, **Frequency response:** 20Hz~20kHz, Circumaural design, **Dual mode:** USB/Analog, Detachable microphone bundled

## Contact

**Creative**  
**Email:** vinayendra.singh@compugaindia.com  
**Website:** in.creative.com  
**Price:** ₹4,000

6.5/10

Features ..... 7.0  
Performance..... 6.5  
Build Quality ..... 6.5  
Value for Money ..... 7.0

# Viewsonic Pro8400 projector

## Wins where most other projectors have lost

## Specifications

**Type:** DLP projector;  
**Video Resolution:** Full HD resolution; **Contrast Ratio:** 3000:1; **Brightness:** 4000 ANSI lumens; **HDMI in:** 2 HDMI; **Weight:** 3.86kg

## Contact

**Viewsonic India**  
**Web site:** www.ap.viewsonic.com/in/  
**Price:** ₹1,47,000

8.0/10

Features ..... 8.0  
Performance..... 8.5  
Build Quality ..... 7.5  
Value for Money ..... 8.0

**S**traight out of the box, the Pro8400 looks the part - a full-fledged 'I mean business' HD projector. You have two HDMI inputs to connect multiple devices to the projector. The Pro8400 has built-in speakers, it can spit out audio as well - something projectors are lacking off late.

We had placed the projector about 3 feet from the wall, and got about 80-inches big display. To utilize the two HDMI inputs, we hooked up the TataSky HD set top box and a WD Live HD media player to the Pro8400 simultaneously. First off, we checked the SD content performance. It handled the low resolutions quite well even when blown up to this

size. Keeping the sharpness setting around 10 is perfect for SD content. We then switched to HD content, and to Star Movies HD and ESPN HD on TataSky. The colour reproduction was good, quite visible by the uniformity of the green grass. However, when the camera panned quickly, the crowd would look like jagged lines momentarily. Movies are where the depth of the blacks was of paramount importance, and this one did as well as the LG AF115 we had reviewed earlier. The whites tend to be overbearingly bright,

and that can be a little stressful on the eyes.

We were deeply impressed by the brightness levels offered by this projector. So much so that this is the first projector to have won the battle against daylight streaming in through the windows! Brightness and contrast levels were set just above 50 per cent.

Bright enough to actually work in any room at any time of the day, the Pro8400 is meant for someone who would like a projector at home, but doesn't really have a dedicated, darkened room for a home theater.

The image reproduction is delightful, and handles SD content better than most.

*Visbal Matbur*





## Offline Facebook

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## XQD Memory cards unveiled

Sony launched the world's first XQD memory cards boasting read/write speeds of upto 125MBps

Bazaar

# Apple Mac mini

## Style finally meets performance

While the Cupertino-based company dazzles the tech world with iPhones, iPads and MacBook Airs, the Mac mini seems to be the forgotten child in Apple's product portfolio. Still with the latest revision of the most inexpensive Mac ever, the mini boasts of improved performance thanks to Intel's second-gen Sandy Bridge Core i5 processor and a Thunderbolt I/O port at the back. Its uni-

body single-block aluminium design is much the same as its predecessor, the Mac mini looks so simple yet so elegant on the desk—not to forget its tiny, solid, and compact form factor.

In terms of bundled features, there are two main talking points. First, there's no optical drive on or bundled with the Mac mini — with Apple allowing Lion re-install through recovery partition and USB sticks. But yes, you'll need an external DVD writer to

install an older program, which adds to the cost. Also the entry-level Mac mini comes with the Mac mini's hood to access its RAM and Wi-Fi modules- it is quite easy—anything more requires a screwdriver and a lot of patience.

The Core i5 processor and AMD Radeon HD 6630M graphics ensures high performance on the new Mac mini, with multi-threaded apps and casual 3D games running just fine, it does tend to get heated up though. It's a great HTPC box as well, given the number of connectivity ports on the back. As far as mini PCs go, the Mac mini deserves consideration.

Jayesh Shinde

## Specifications

**CPU:** Intel Core i5-2520M 2.3 GHz; **RAM:** 2 GB DDR3; **HDD:** 500 GB; **GPU:** AMD Radeon D 6630M; **Dimension:** 7.7-inch-by-1.4-inch; **USB:** 4; **HDMI,** Thunderbolt, Card reader, FireWire 800, Headphone, Microphone; **Optical drive:** No; **OS:** Mac OS X 10.7 Lion

## Contact

**Apple India**

**Phone:** 18004254646

**Website:** www.apple.com/in

**Price:** ₹33,990



7.0/10

|                       |     |
|-----------------------|-----|
| Features .....        | 6.5 |
| Performance.....      | 7.0 |
| Build Quality .....   | 8.0 |
| Value for Money ..... | 6.5 |

# Canon Legria HF R205

## An affordable camcorder, with HD capability

## Specifications

**Image Sensor:** 1/4.85-inch HD CMOS sensor, approx. 3.28 megapixels; **Zoom:** 18x optical; **Max video resolution:** 1920 x 1080 pixels; **Memory:** SD card; **Display:** 3-inch; **HDMI out:** Yes

## Contact

**Canon India**

**Phone:** (city code) 39010101

**Email:** www.canon.co.in

**Price:** ₹19,995

Camcorders did take a back seat because most smartphones were also doing what the camcorder did as a standalone device. However, it is true that the smartphone's video recording capabilities are severely restricted, in terms of features and quality. The fight-back has begun with the affordable camcorders - the Legria HF R205 is one such device.

It has a 1/4.85-inch HD CMOS sensor, shooting at approx. 3.28 megapixels with 18x zoom. The 3-inch display is a touchscreen. Menu navigation is a bit of a pain and seemingly you can't access settings quickly, or make changes swiftly and get on with the clicking.

We must say that the videos are quite rich in terms of colour and crispness. Subject details are fully visible, and the HF R205 will

do all this in 1080p HD. However, Electronic Video/ Image stabilization is a huge drawback - it just doesn't seem to work. Unless you have a very steady hand there will be considerable amount of shake. The problem is even worse if you have zoomed to focus onto a distant object.

There is no built-in storage on the Legria HF R 205, but Canon ships it with an 8GB SD card.

For just under ₹20k, you could consider this if you can handle the annoying menu. Or consider spending a little more and go for the Sony HDR-CX130E/R, with much better image stabilization as well.

Vishal Mathur



6.0/10

|                       |     |
|-----------------------|-----|
| Features .....        | 6.5 |
| Performance.....      | 6.0 |
| Build Quality .....   | 7.5 |
| Value for Money ..... | 6.0 |

# ZOTAC ZBOX PLUS ID80

## Cedar Trail is upon us!

The ZBOX PLUS ID80 is the first ZBOX to sport the Intel Cedar Trail D2700 processor clocked at 2.13 GHz along with 2GB of DDR3 RAM, 320GB hard drive and a discrete graphics solution - NVIDIA GT 520M. It also bundles in quite a lot of goodies such as a WiFi antenna, a Windows Media player remote control and an IR receiver for the same. Design wise the ZBOX looks like any other ZBOXes we have tested in the past. It has the blue coloured circular orb on its front black glossy face.

Build quality is quite sturdy even though its a plastic body and we liked the stand that ZOTAC have provided so that the system is held vertically in

place. The glossy surface is a finger-print and dust magnet.

PC Mark Vantage gave an overall score of 2575 whereas for the E350 CPU we got 2550. Cinebench R10 multi-core rendering was found to be slightly better in the D2700 (at 2600 marks) over the E350 (at 2030 marks). Gaming wise also we could get barely playable frame rates - 11 FPS - even at 1280x1024 resolution for Resident Evil 5 at Medium settings.

HD videos were played back flawlessly. CPU utilization was within the 5-7 per cent mark for majority of the playback time.

It is great for media consumption, watching TV, watching HD content along with casual web surfing, working on office docu-



ments, etc. At a price point of ₹19,999, we felt it to be slightly on the higher side but much better than the ADO3BR and HD-ID34 ZBOXes which sport a Blu-ray Drive. Decent buy provided your needs are moderate.

*Nimish Sawant*

### Specifications

**Processor:** Intel Atom D2700; **Clock:** 2.13 GHz; **Memory:** 2 GB DDR3; **Graphics solution:** NVIDIA GT 520M; **USB Ports:** 2x USB 3.0, 4x USB 2.0; **Display ports:** HDMI, DVI

### Contact

**ZOTAC India**  
**Email:** [deepak@zotac.com](mailto:deepak@zotac.com)  
**Phone:** 9920675457  
**Website:** [www.zotac.com](http://www.zotac.com)  
**Price:** ₹19,999

6.5/10

|                       |     |
|-----------------------|-----|
| Features .....        | 7.5 |
| Performance.....      | 5.5 |
| Build Quality .....   | 6.5 |
| Value for Money ..... | 6.5 |

# Dell 4610X projector

## The projector for the home office

### Specifications

**Projector Type:** DLP; **Native resolution:** 1024x768; **Aspect Ratio:** 4:3; **Brightness:** 3500 ANSI lumens; **Contrast:** 2000:1; **HDMI:** Yes

### Contact

**Dell India**  
**Phone:** 080-25108980  
**Email:** [www.dell.co.in](http://www.dell.co.in)  
**Price:** ₹47,271

8.0/10

|                       |     |
|-----------------------|-----|
| Features .....        | 8.0 |
| Performance.....      | 8.0 |
| Build Quality .....   | 8.5 |
| Value for Money ..... | 8.5 |

The first thing that we noticed about the 4610X is the feature set vs. the price, and the conclusion looked impressive. The 4610X is built very well. The square designed control keys are on the top panel, with a classy illumination to them. All connectivity options - AV, power and wireless antenna are on the rear panel.

This projector has a native resolution of 1024x768, but with the HDMI input available, it can receive signals up to 1080i. This resolution is welcome considering it is meant for the home office use, and 4:3

aspect ratio is perfect for document viewing and presentations. Unlike a lot of projectors we have reviewed recently, this one can handle audio, thanks to the built-in speakers. The built-in wireless capabilities mean you can share files on the network, without having to connect a PC every time. The range isn't a lot though.

Picture settings can be tweaked to a certain extent, but aren't as extensive as on some

projectors targeted for home use. Brightness levels are very high.

The remote responds well most of the time, but the real fault lies with the design. Somehow, the fingers can never really remember the key placement, forcing you to look at it every time. No backlit keys as well, something that will be drawback in a dark room during a presentation.

Overall, this projector will do the task its meant to do, very well. It is a budget projector, and is meant to appeal to a limited demographic - the small office setup. Anyone buying it for home use will be disappointed.

*Visbal Matbur*





## Shakeup at RIM

RIM Co-CEOs Mike Lazaridis and Jim Balsillie were demoted from their positions. Thorsten Heins is the new CEO of RIM

## Social media losing its charm

According to a recent survey by Assocham, India's urban youth is slowly spending less and less time on social networking sites

**Bazaar**

# ASUS PA246Q

## An affordable professional grade monitor

**B**elonging to the Pro Art series of monitors, the ASUS PA246Q is a monitor meant for professional designers and photographers. Its a 24-inch Professional IPS (P-IPS) panel monitor with a native resolution of 1920x1200 and it uses CCFL backlighting thus explaining its bulky form factor. The monitor

is surrounded by a matte black bezel and it has a very sturdy stand which allows you to tilt, swivel, adjust monitor height as well as pivot by 90 degrees to go from landscape to portrait mode (but you will have to manually change the display orientation).

The OSD offers many tweaking options including six axis hue/saturation, gain control; the QuickFit button provides real-size document grid atop the window, etc. There are around five picture preset modes including sRGB, Adobe RGB, User among others.

At 50 per cent brightness and 75 percent contrast in the User mode, we got a contrast ratio of 526:1 with the

Spyder 3 Elite colorimeter. The black levels were around 0.32. You can tweak the calibrations to your liking. It passed most of the Lagom.nl tests which tests the monitor's black to white gradient level, the colour bands were distinctly visible across all colours, only in the Inversion test which involves various moire patterns on the screen did we notice some flickering in 2 out of 11 tests.

Text was rendered well and watching full HD content was a joy. Although we did not find the blacks to be very deep. There was absolutely no banding or noise in the solid coloured areas.

At ₹29,000 this is probably one of the more affordable professional grade monitors.

*Nimish Sawant*

## Specifications

**Display size:** 24-inch; **Panel:** P-IPS; **Display Ports:** HDMI, D Sub, DVI, DisplayPort; **Display Colors:** 1073.7M (10-bit); **Resolution:** 1920x1200

## Contact

**ASUS Technology Pvt Ltd**  
**Phone:** 1800 209 0365  
**Email:** reachus@asus.com  
**Website:** www.asus.in  
**Price:** ₹29,000



7.5/10

|                       |     |
|-----------------------|-----|
| Features .....        | 7.5 |
| Performance.....      | 7.5 |
| Build Quality .....   | 8.5 |
| Value for Money ..... | 7.0 |

# ASRock X79 Extreme 9

## An enthusiast's companion with massive storage connectors

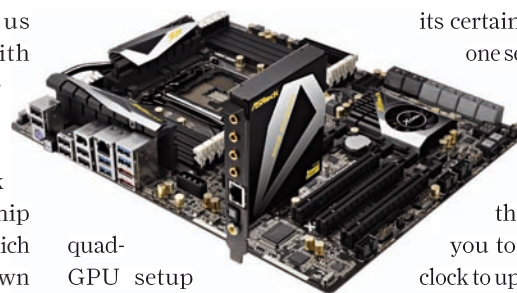
## Specifications

**Form Factor:** ATX; **Chipset:** Intel X79; **DIMM slots:** 8; **Back Panel Ports:** 4xUSB 3.0, 6xUSB 2.0, 2xeSATA, 1xLAN port; **Expansion slots:** 5xPCIe 3.0 x16, 1xPCIe 2.0 x1; **SATA 6 Gbps ports:** 8

## Contact

**Jupiter International**  
**Email:** manoj\_kriplani@asrock.com.tw  
**Phone:** +886 919 457 786  
**Website:** www.asrock.com  
**Price:** ₹27,999

**A**SRock had us impressed with their feature packed Z68 Extreme 7 Gen 3 board. With the new X79 chipset, ASRock has come out with its flagship board – the X79 Extreme 9 which sports the similar black, brown and gold colour combination. The sharp designs on the heat-sinks are impressive and the heatsink over the X79 chipset has an onboard fan that drives the heat downwards. It comes with five PCIe slots with support for PCIe 3.0 standard. There are as many as 12 SATA ports including two eSATA ports and two USB 3.0 headers which takes care of most of your storage device connection needs. You can run a



quad-GPU setup in x8/x8/x8/x8 mode or dual-GPUs in x16/x16 setup.

Absence of audio and mic jack is filled with the Creative Sound Core3D PCIe x1 card along with Broadcom BCM57781 LAN PCB module which is bundled in what's called the GameBlaster.

Build quality is extremely good and the overall layout leaves little to complain about. The UEFI BIOS looks good, but

its certainly not as great as the one seen on ASUS Rampage IV Extreme. Overclocking module offers easy clock presets to overclock the processor, allowing you to take base multiplier clock to upto 60x. Two digit error readout LEDs and dedicated power/reset buttons are great for enthusiasts. We could overclock it to upto 4.15 GHz on air which gave a significant improvement in scores.

The pricing of ₹27,999 is on the higher side specially when you consider its competitor, the ASUS Rampage IV Extreme which comes for a mere ₹700 more and packs in a lot of innovative features.

*Nimish Sawant*

7.0/10

|                       |     |
|-----------------------|-----|
| Features .....        | 7.5 |
| Performance.....      | 7.5 |
| Build Quality .....   | 8.5 |
| Value for Money ..... | 5.5 |

**Summify bought by Twitter**

Summify, a news aggregator service for Twitter users, was acquired by Twitter and will be ultimately shut down

**Xperia Pro at 20k**

Sony Ericsson has slashed price of its Xperia Pro smartphone by around ₹4,000, to ₹20,030

# Lenovo IdeaPad Y570

## A very good all-purpose home laptop below ₹50k

The Lenovo IdeaPad Y570 is a solid home entertainment laptop which is good for casual gaming as well. It has a brushed metal screen lid with a funky dot-pattern to lend the IdeaPad Y570 an air of premiumness on the outside, while

the laptop's gunmetal gray deck with black keys feels good on the eyes. The IdeaPad Y570 certainly isn't easy to carry around for a 15-inch home entertainment laptop, weighing just under 3-kg.

As you can see from the specs alongside, the Lenovo IdeaPad Y570 comes with a potent mixture of latest hardware building blocks—it could've had a faster hard drive and higher-resolution display, lending the laptop a great foundation to deliver high performance, be it gaming with 3D games or watching HD 1080p movies or listening to audio on the laptop's JBL speakers,

the overall user experience on the IdeaPad Y570 is very good.

We liked the laptop's isolated keyboard with scalloped, curved keys which are great for typing, and the keyboard had no flex to deliver a top-notch typing experience. The touchpad has a nice dotted grid for haptic feedback while scrolling with your finger—if only the included mouse buttons were separate, everything would've been just perfect. The laptop's 6-cell battery lasted just under 2 hours in our tests, which is very good for a high-performing laptop. Overall, we're very impressed with the IdeaPad Y570 and have no hesitation in recommending it for your home entertainment use.

*Jayesh Shinde*

**Specifications**

**Screen:** 15.6-inch glossy LED, 1366x768 res; **CPU:** Intel Core i7-2630QM 2 GHz; **RAM:** 6 GB DDR3; **HDD:** 750GB; **GPU:** Nvidia GeForce GT555M and Intel HD 3000; **USB ports:** 4 (2 x USB 3.0); eSATA, HDMI, VGA, SD card reader; **Optical drive:** Yes; Wi-Fi 802.11n, Ethernet, Bluetooth; **OS:** 64-bit Windows 7 Home Premium

**Contact**

**Lenovo India Pvt Ltd**

**Email:** [www.lenovo.com/in](http://www.lenovo.com/in)

**Phone:** 080-30533000

**Price:** ₹49,990

8.0  
10

|                       |     |
|-----------------------|-----|
| Features .....        | 8.0 |
| Performance.....      | 8.0 |
| Build Quality .....   | 7.5 |
| Value for Money ..... | 8.0 |

# ECS X79R-AX Black Extreme

## Affordable high end X79 board offering

**Specifications**

**Form Factor:** ATX; **Chipset:**

Intel X79; **DIMM slots:** 4; **Back**

**Panel Ports:** 4xUSB 3.0, 6xUSB

2.0, 2xeSATA, 2xLAN port;

**Expansion slots:** 4xPCIe 3.0

x16, 2xPCIe 2.0 x1; Onboard

WiFi, Onboard Bluetooth

**Contact**

**Elitegroup Computer System**

**Email:** [hemant.dalmia@](mailto:hemant.dalmia@rptechindia.com)

[rptechindia.com](http://rptechindia.com)

**Website:** [www.ecs.com.tw](http://www.ecs.com.tw)

**Price:** ₹16,568

ECS X79R-AX is the only socket LGA2011 board from ECS apart from its Deluxe line. It has only 4 DIMM slots for DDR3 RAM which is half of that seen on flagship X79 boards. An on-board WiFi LAN feature, a rarity in high end boards, is present on the X79R-AX. Just behind the 24-pin power connector there are voltage monitoring points for CPU, memory and chipset voltage readouts.

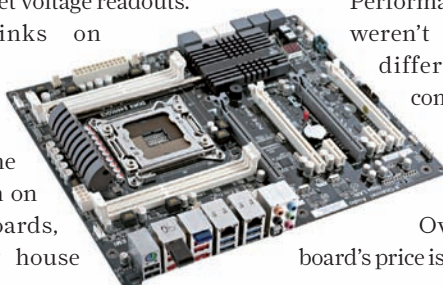
Heatsinks on this board aren't as impressive as the ones seen on other boards, but they house

temperature sensitive stripes, which glow with different colours based on their operating temperatures, quite good.

UEFI BIOS is easy to navigate around. Overclocking options aren't as exhaustive as the Rampage IV Extreme and can be found under MIB section of the BIOS. A Quick OC button allows you to go upto 4.5GHz under load, but tweaking the multiplier settings is a pain.

Performance scores weren't drastically different from competing X79 chipset based boards.

Overall, this board's price is economical



for an X79 chipset, but it comes with its limits.

*Nimish Sawant*

6.5  
10

|                       |     |
|-----------------------|-----|
| Features .....        | 6.5 |
| Performance.....      | 6.5 |
| Build Quality .....   | 6.5 |
| Value for Money ..... | 7.0 |

## MORE REVIEWS



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# Bazaar

mini QUICK  
INSIGHTS  
FROM INDEPTH  
TESTS

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests, and is finally given a verdict. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score

- 1.0 - 3.0 - Extremely poor product. Keep away!
- 3.5 - 5.0 - Strictly OK. Not recommended
- 5.5 - 6.5 - Decent product. Go for it, but there may be better products out there.
- 7.0 - 8.5 - Very good product. Highly recommended.
- 9.0-10.0 - Ground-breaking product. We've never seen anything like it before. A definite must buy!



## PirateBay to allow physical downloads

A new file category called Physibles lets you print mock models of objects on real 3D printers, its an expensive exercise though  
<http://bit.ly/wPEw1R>

### HARD DRIVE



**WD 1 TB Scorpio Blue (WD10JPVT)**  
Price: ₹10,650

### MONITOR



**ASUS ML238H**  
Price: ₹10,600

#### SPECIFICATIONS

Capacity.....1 TB  
Interface .....SATA 2  
Cache buffer .....8 MB  
Rotational Speed.....5400RPM

Screen size .....23-inch  
Type.....LED backlit LCD  
Display Ports .....D-Sub, HDMI  
Response time (gray to gray) ..... 2ms

#### TEST CENTRE RATINGS (All Scores out of 10)

##### Features.....7.0

It has two 500 GB platters which it manages to fit in the 9.5mm thick drive. This is an advanced 4K format drive.

##### Performance.....6.5

HD Tune Pro Read Burst speed: 195.3 MB/s. Real world Read / Write (Sequential)(MB/s): 109 / 106 and Read / Write (Assorted)(MB/s): 77 / 69.

##### Build quality .....8.0

Just like its older siblings, the build quality on this drive is top class.

##### Value for money .....4.0

At ₹10,650 it's quite heavily priced, but then that's the case with all HDDs today after the Thailand floods.

##### Features.....7.0

It has a variety of options and colour profiles to choose from the OSD. Comes with a unique stand.

##### Performance .....7.0

Contrast ratio acc to Spyder3Elite at 50 percent levels was around 478:1 which is decent. Skin tones rendered well.

##### Build Quality.....6.5

Glossy finish is a fingerprint magnet. Touchscreen menu buttons are a pain to operate. Stand is not very stable.

##### Value for Money.....7.0

At ₹10,600 for the unique design and performance, its a good price point.

#### WE SAY

6.0

The WD Scorpio Blue 1TB is a good drive for those looking at mere capacities and are not really concerned with the performance. The sequential speeds which are comfortably over 100 MB/s are good enough for everyday usage. For performance enthusiasts, the older WD Scorpion Black 750GB (WD7500BPKT) is still the drive to opt for. The pricing of ₹10,650 gives a cost per GB of ₹10.74 which is very high. Due to the floods in Thailand, which has the manufacturing hubs of these drives, prices have gone up. We would advise you to wait till the HDD prices reach sensible levels.

7.0

ASUS ML238 is a great full HD monitor with good looks for its price. We liked the various modes such as sRGB, Adobe RGB, Theatre, etc. The colours were rendered well and we found the sRGB mode to be the best amongst others. HD movie viewing experience was quite good but we noticed slight backlight bleeding in pitch dark scenes. Readability of text was quite good but we were put off with just a VGA and HDMI display out. It does come with DVI to HDMI converter and a range of power connector cords. Banding wasn't an issue. Assembling the stand is a bit of a task though.

## ACTA - Intrusive?

Under provisions of this act, airport officials can now search your gadgets under the pretext of looking for pirated content.

## On both sides of the coin

Kelihos botnet creator is an ex-employee of a known anti-virus firm.  
<http://bit.ly/ygG4Eh>

## PRINTER



## Xerox Phaser 3010

Price: ₹4,900

## USB FLASH DRIVE



## Kingmax Elite ED-01 128GB

Price: ₹16,000

## HEADPHONES



## Sennheiser HD 220

Price: ₹3,490

## NAS DRIVE



## Iomega Home Media Network Hard Drive

Price: ₹5,275

## SPECIFICATIONS

Processor.....150MHz  
 Memory.....64MB  
 Resolution supported (max).....1200dpi  
 Duty Cycle .....Up to 30,000 pages

Dimensions (LxWxH).....74.5 x 20 x 9 mm  
 Weight.....10.5g  
 Sequential write.....44.68MB/s  
 Random write.....11.38MB/s

Ear coupling .....Supraaural  
 Frequency response .....19-21000 Hz  
 Sound pressure level (SPL) .....108 dB  
 Impedance.....24 ohm

Capacity.....1TB HDD  
 Port.....1 USB  
 Support.....Print server support  
 RAM.....256 MB

## TEST CENTRE RATINGS (All scores out of 10)

## Features.....6.0

The printer is extremely compact. The main tray holds 150 pages, a little less compared to the Brother HL-2130.

## Performance .....6.0

Our text test sheet took 10.81 secs at 1200 dpi and in draft mode, we got five sheets in 16.21 secs.

## Build Quality.....6.0

The build quality is nothing great, the build of the output tray is very flimsy - the overall build could have been more sturdy.

## Value for Money .....6.0

At ₹4,900 it's a decent buy.

## Features.....7.0

With 122.07 GBs of formatted space, it's great for carrying your work wherever you go.

## Performance .....4.0

Performance suffers quite a lot when transferring large amount of files. Excessive temperatures over large volume of file transfers.

## Build Quality.....4.0

Not up to the mark, brittle plastic cap. Rubberised body with matte texture.

## Value for Money .....5.0

Expensive than an SSD but offers ultraportability.

## Features.....6.5

The HD 220 is essentially a remixed version of the HD 218.

## Performance .....7.0

While those who are looking for thumping bass will be turned off, the HD 220 does appeal to a bigger demographic for a variety of listening purposes.

## Build Quality.....7.0

Made of plastic throughout, fake leather treatment for the ear-pads and the headband wraparound.

## Value for money .....7.5

Offers a good value for money for its performance.

## Features.....6.0

DLNA and iTunes support, Access to cloud service, Quick transfer button, Three-year warranty

## Performance .....4.0

Data transfer speeds were pretty low, can handle full 1080P HD playback. Multiple access to drive affects the performance severely.

## Build Quality.....5.0

Improper placement of Kensington lock slot, high centre of gravity when used with base.

## Value for money .....7.0

Great value for money considering the features packed in for the price.

## WE SAY

6.0

The Xerox Phaser 3010 is its latest entry-level monochrome laser printer targeted at home offices and small businesses. Overall, we were impressed with the speeds at which the prints were outputted. While the quality remains top notch at 1200 dpi, it drastically falls when set in draft mode where prints look washed out. The printer also got extremely heated up after a few prints. You could either settle for this or shell out another ₹300 for a much better printer in the form of Brother HL-2130.

5.0

Quite a decent flash drive given the capacity it offers. The transfer speeds, however, take a hit even with a USB 3.0 interface. Our guess is that the controller used isn't capable of high IOPS. The random write speeds are worse than some USB 2.0 flash drives we've reviewed. The build quality could improve. The rubberised exterior feels good to hold. Ideal for someone with need for a lot of storage space but not interested in great speed. Overall, it's a good flash drive, but from the price point at which it is offered, we'd settle for something else.

7.0

This is one fashion sound accessory that doesn't cost a bomb. And manages to not look ghastly either! Sound, as we always say, is something every individual deciphers in a different way. From what we concluded, the HD 220 walks the middle path quite well. Neither is it bass heavy, nor does it have the bias towards treble. While music aficionados will turn up their noses at this one, we believe that it works well in most listening scenarios. You can settle for this, it will cost you about ₹3,200 in the market or you can also check out its sibling, the HD 218 which will cost about ₹2,900.

6.0

On their own, 1 TB hard drives cost upwards for ₹5200. Getting the same in a protective case with network capability for just a few hundreds bucks more is a great deal any day. The placement of the Kensington lock, however, makes no sense as there are 2 screws on the same face which when removed gives access to the innards of the drive. The User interface of the bundled software is easy to navigate. Extra features include a Quick transfer button and a USB port. The build quality is pretty decent, but a wider base could have been adopted. Overall, a decent product.



## Zynga spends \$300/player

The social gaming giant spends close to \$300 towards acquiring new players.  
<http://bit.ly/ySGDUn>

## Skyrim 1.4 beta out

Those on the beta access channel now have access to the 1.4 beta patch on steam.  
<http://bit.ly/wF34gU>

**Bazaar mini**

### NAS DRIVE



#### Seagate GoFlex Home Network Drive

Price: ₹15,000

### GAMING KEYBOARD



#### Corsair Vengeance K60

Price: ₹5,900

### UNIVERSAL REMOTE



#### Logitech Harmony 1100i Advanced

Price: ₹27,995

### GAMING MOUSE



#### Corsair Vengeance M60

Price: ₹2,650

### SPECIFICATIONS

Capacity.....3 TB 7200 RPM HDD  
 Ports.....1 USB port  
 Transfer speeds.....averaged 17.2MB/s  
 RAM.....128 MB

Actuation force ..... 45g  
 Report rate .....1ms/2ms/4ms/8ms  
 Wire ..... 2m non-tangle  
 Connectivity .....Wired USB 2.0

Type.....Universal remote  
 Display ..... 3.5-inch touchscreen  
 Variety .....works with 15 devices;  
 Compatibility .....225000 devices;

DPI .....5700  
 Response time .....1ms/2ms/4ms/8ms  
 Programmable keys .....2  
 Connectivity .....Wired USB 2.0

### TEST CENTRE RATINGS (All scores out of 10)

**Features.....7.0**  
 GoFlex app available for IOS & Android, Seagate Dashboard bundled software.

**Performance .....7.0**  
 Quite a fast drive, supports simultaneous multiple 1080P HD playbacks. Average speed - 17.2MB/s

**Build Quality.....5.5**  
 Solid plastic casing. Three clips are present to lock the HDD onto the base.

**Value for Money.....7.0**  
 Given the recent surge in hard drive costs and the fact that this packs in 3 TBs of data, this drive is targeted at premium consumers.

**Features.....6.0**  
 Sculpted FPS keys, key removal tool, weighted volume roller, Cherry MX red mechanical keys.

**Performance .....8.0**  
 Excellent performance throughout, recognizes 20 simultaneous key strokes, slightly noisy however.

**Build Quality.....8.0**  
 Solid build quality and good looks ensure that the Corsair Vengeance K60 stands out from the crowd.

**Value for Money.....5.0**  
 At a price of ₹5,900 is not too cheap, especially without programmable or backlit keys.

**Features.....7.0**  
 The square design houses a 3.5-inch touchscreen display, that allows a whole lot of traditional buttons to be done away with.

**Performance .....7.5**  
 Setting it up can be a bit tricky, particularly if you have a lot of gadgets on the menu. Beyond that, the performance is effortless.

**Build Quality.....8.5**  
 The square design is finished with the glossy black colour on the front and a rubberized finish at the back.

**Value for money.....5.5**  
 This one costs a lot of money.

**Features.....8.0**  
 Weighted metal scroll wheel, 2 programmable keys, Ultra Low Friction PTFE pads, USB connector with gold plated contacts.

**Performance .....8.0**  
 Well located buttons, easy tracking / DPI / lift-level / report rate adjustment, decent bundled software, and excellent operation.

**Build Quality.....8.0**  
 Excellent build quality, feels great and killer looks.

**Value for Money.....9.0**  
 At ₹2,650, Corsair have made the Vengeance M60 a real steal.

### WE SAY

**6.5**

This NAS device packs in 3 TB of data. Transfer tests were quite promising and we were able to playback 4x 1080P HD videos on 2 computers at the same time. That's 8x 1080P HD playback! Seagate has come out with GoFlex Access, an app on IOS and Android allowing easy access to your files anywhere. The UI of the app is pretty user friendly too. The bundled software requires you to be connected to the internet in order to register your drive the first time. One can easily connect this to a wireless N router and stream media to computers without any fear of bottlenecks.

**7.0**

Overall, the Corsair Vengeance K60 is solid gaming keyboard, with excellent build quality, great performance and adjustable settings. However, at its price, Corsair really should have included a bank of programmable keys, as well as backlit keys, both of which can be found in its slightly more expensive sibling – the Vengeance K90 – as well as lower priced offerings from competitors. If you are not looking for these two features, the Vengeance K60 is a good buy, delivering top-notch performance at its price. It's two-year warranty is also notable.

**7.0**

If you have the habit of leaving all the home theater gadgets on standby, this remote will perform seamlessly. If, however, you have the habit of turning things off, you will realize that the likes of the WD Live media player and Tata Sky HD would start straightaway at full power, and not on standby mode. This tends to confuse the Harmony more often than not. Using the Assistant feature solves the problem. Buy this if you really need to have a remote that looks brilliant, and don't really care how much it costs.

**8.0**

All in all, the Corsair Vengeance M60 is a great gaming mouse, especially at its price of ₹2,650. It provides good value for money, serious good looks, excellent comfort, and exceptional performance. We highly recommend this piece of hardware. Its more expensive sibling does not offer much more in addition, except for 15 programmable buttons in total. In that sense, the M90 is more of a MMO or RTS gaming mouse, as there are only few games with a requirement for so many mouse controlled buttons.



## A classic beat-'em-up game !

Aniruddh "DoubleDee" Subramanian  
feedback@skoar.com

**B**undle a remake of the classic PS2 game Tekken Tag Tournament, a sneak peak into Tekken Tag Tournament 2 Prologue and a 3D-CGI movie, Tekken: Blood Vengeance together and you get Tekken Hybrid. Is the bundle a worthy buy? Let's find out.

The HD version of Tekken Tag Tournament is definitely the bundle's core and best offering. The game is insanely fast-paced with absolutely tense fights. What's more, all the players are unlocked for you to play with right from the beginning. All you have to do is dive right into the action. The Tag battle combines a unique battle experience. You choose two characters (Tag team) to be sent to a battle against two opponents. You can switch between the characters whenever you like. Mastering the art of using both of your characters is the actual challenge. This is because when you switch between your characters, the resting character gains health. You need to know exactly how much time you should let your fighters spend in the battle. It's the key to winning. The moment one of your characters gets KO'd, you lose the game. The

fights require loads of practice and skill and are quite a challenge.

There are different modes you can choose to play with - Arcade, Survival or Time Trial. The mode that had us bowled over was the mini bowling game - Tekken Bowl. You get a pick of two bowlers from among other players, each having his own strengths and weaknesses, so choose your team wisely.

The biggest disappointment, however, is that the game lacks online functionality.

The second bit of the bundle is the Tekken Tag Tournament 2 Prologue. This game gives you a sneak peek into the forthcoming title. You get four characters to choose from: Devil Jin, Devil Kazuya, Alisa and Xiaoyu. When you play this, you know that Tekken Tag is definitely headed in the right direction. It provides much tighter battles and a much smoother gaming experience all around. Interest-

ingly, you can now perform combo moves with your tag partner. Being a demo, the game doesn't really have too much content to play around with.

The third

bit of the package is the 3D-CGI movie Tekken: Blood Vengeance. The movie has its share of ups and downs.

Although the movie isn't really exciting, we don't think it would disappoint a Tekken buff. \*

### Verdict:

Tekken Hybrid, in reality, has only one real component worthy of your money - Tekken Tag Tournament. The super fast-paced fighting experience is a delight to anyone who loves fighting games. The add-ons Tekken Tag Tournament 2 Prologue and Tekken: Blood Vengeance aren't exactly meant to consume your time and seem to have been thrown in to make the package look attractive. However, if you're a die-hard Tekken addict, this is one exciting package to grab - it surely won't disappoint you.

### Ratings:

- » Genre: Fighting
- » Developer: Namco
- » Publisher: Namco
- » Price: ₹1,549 (PS3)





SKOAR!



Anirudh "Mad Zombie" Regidi  
[feedback@skoar.com](mailto:feedback@skoar.com)

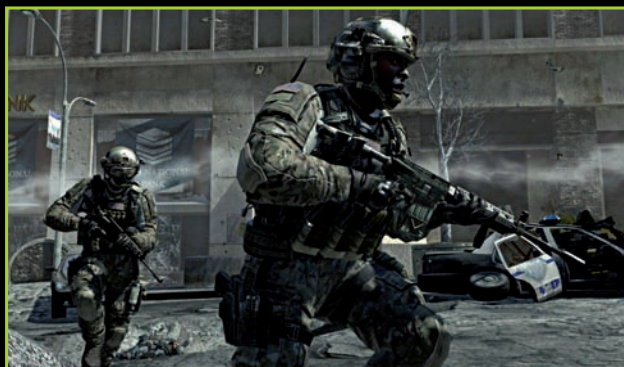
First released way back in 2003, the Call of Duty franchise is steeped in tradition. So much so in fact, the basic formula hasn't changed in almost a decade, not that it should. Almost every game has been a super hit and Activision has made billions off the franchise. The game engine isn't ground breaking, but it has always managed to hold its own. Now however, it remains to be seen how the game holds up in front of current generation graphical powerhouses such as *Battlefield 3*.

## Gameplay

This is an aspect that doesn't really bear mentioning to someone who has played any *Call of Duty* game before. The gameplay has not really changed in any significant way but has evolved over the years to include some new

mechanics and elements. It's still about pointing your gun at targets as they appear and clicking as fast as you can, but, well, it's an insane amount of fun! Getting tossed about in a plummeting aircraft or falling 2 stories in an M1 Abrams are among the most memorable sequences. With frenzied fight sequences, some amazing scripted battles and cut-scenes, this is one frantic shooter that will keep you glued to your controller till the very end. A satisfying end it is too.

The "Spec Ops" has been enhanced. There is a lot of fun to be had even in the single-player and co-op missions. What is notable is the inclusion of a survival mode where you and your buddies can pit yourselves against wave after wave of unrelenting opposition till every last one of you is killed. You can get multiple weapon upgrades along the way, including the usual perks system. You can also call down air-support and



## Verdict

Overall, the game is still (more or less) the same, but it's something that needs no fixing. The formula works, the action is frenetic and a blast (literally at times) and the campaign is cheesy. Spec Ops is fun, you get to play with guns, kill some animated people, use a multitude of guns and weapon systems, etc. What more could you ask for in a COD game?

## Ratings

- Developer: Infinity Ward, Sledgehammer games
- Publisher: Activision, Square Enix
- Genre: First-Person Shooter
- Price: ₹3,000 (Steam(PC))

deploy automated turrets and grenade launchers. The best part is that the XP you gain in such stages is carried forward to the multiplayer, ensuring a more even battleground. Many of the Spec Ops missions can be played as standalone levels and do extend the play-time, especially as you are required to level-up to unlock them.

## Story? Really?

The story is cheesy as hell, but is in its own way captivating enough. The game can be classified as a mindless, action-packed shooter, but there is enough story to provide a cohesive experience, even enough to make you want to listen to the dialogues. That isn't to say that *Battlefield 3* had a better storyline. The ending is worth mentioning in that it finally manages to bring the *Modern Warfare* series somewhat to a close and is quite satisfactory.\*

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**Next Xbox to be 6x faster**

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<http://gizmo.do/yxWcnd>

# Techxtravaganza

Round-up of Asia's largest technology symposium, Techfest 2012 held at IIT-Powai

The big daddy of all the technology festivals not only in India, but the whole of Asia – the IIT Techfest, happened in January. Just like last year, we were there this year as well. We got to see some cutting edge technology over the three days, attend

some rivetting talks, cheer participants of the Robowars and Bridge building competitions and much more. Do check out the DVD for some exclusive videos of the event. Seen here are some things at the IIT Techfest that impressed us.

**Nao**

The humanoid robot Nao had everyone impressed with its ability to mimic human behaviour. Developed by Aldebaran Robotics from France, Nao is finding application in the real world as an active lab assistant, assisting children with autism thanks to its ability to express happiness, sadness, anger and other emotions like humans.

**Canyon Cross**

A very interesting bridge building competition. Participants can only build a bridge using tooth picks, ice-cream sticks, white glue and thread! You need to apply all your knowledge of trusses here as the catch in the competition was that the bridge should be able to sustain certain load. Last we heard some bridge could sustain 200 kg plus of load. We got to see some really creative designs here and we also interviewed one team for Digit TV. Go check the DVD.

**Micycle**

This was a unique concept from University of Adelaide, Australia. This unicycle balances you by detecting the rate of fall both forwards and backwards and adjusting the motor speed accordingly. It uses a gyroscope and an accelerometer to measure the rotation and position of the device relative to the ground.

**CrazyCopter**

Touted to be the smallest quadcopter in the world and weighing in at just 20 grams, CrazyFlie is the prototype of the CrazyCopter. It includes a PCB fitted with four motors which can be controlled by a PS joystick. Immediate applications we were told lie in the field of surveillance where the quadcopter fitted with a camera. (Think '3 Idiots' but a very very miniscule quadcopter). Its developed by Arnaud Taffanel, Tobias Antonsson, Marcus Eliasson of Daedalus projects. Find more info here: <http://www.daedalus.nu/>



## Apple Inside

A look into how this giant residing at One Infinite Loop operates  
<http://bit.ly/ze75Jv>

## Making of a giant

An interactive timeline which showcases the rise of Google right from its inception  
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Community



**Aman Maharshi**

installed windows 95 on my android phone



Like · Comment · January 19 at 6:58pm ·

8 people like this.



**Anmol Gaba** amazing work!!!

January 19 at 7:17pm · Like



**Aman Maharshi** Aroni Das but its not

January 19 at 8:06pm · Like



**Aroni Das** Looks like a screensint of windows. Besides, the os is too cramped to be used on a touch screen

January 19 at 8:48pm · Like



**Aroni Das** And, most importantly, android runs on a linux cernel, and the phones are optimized for that. Windows is much different from linux, so theoretically, it's impossible to run windows

January 19 at 8:50pm · Like



**Aroni Das** And, I can see your notification bar. That proves you're still in android. The thing you're saying is windows has to be some wallpaper or launcher

January 19 at 8:52pm · Like



**Rohan Khanduja** he aint lying, it ovrks i have also installed it... this is the link and why do people start with the whole funda of proving ppl that they are lying, DIGIT Team please assure that people who post here are never misled by people who say its fake..... @aroni das please get a life and buy an android phone and visit this link

January 19 at 11:34pm · Like ·



**Rohan Khanduja** <http://pocketnow.com/how-to/how-to-run-windows-95-on-your-android-video>

January 19 at 11:34pm · Like



**Aroni Das** Ok, it's possible. Sorry I don't get much time to check xda. Exams T.T.

January 20 at 6:19am · Like

Follow the entire conversation at on <http://on.fb.me/ze1LXZ>

Head over to [www.thinkdigit.com/forum](http://www.thinkdigit.com/forum) for some of the best discussions, buying advice and user reviews. Of course, you'll meet like-minded (and not-so-like-minded) geeks, leading to some of the most constructive arguments you'll ever have.

Check out the thread below where some of our active members are in a discussion over the launch of the re-vamped thinkdigit.com website.  
 For the full story follow this link [bit.ly/yrNXXA](http://bit.ly/yrNXXA)



## Digit in Vegas

*Even chicks dig it!*

Apart from having a great time at CES 2012, we didn't spare any effort from introducing Digit to members of foreign press and exhibitors. And some of them were only too happy to pose with our January issue. You have to admit it's a photogenic combination.

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## You've been Samsunged

Samsung steps up its Galaxy SIII ad campaign with two new videos  
<http://bit.ly/yzYs4X>

## Hilarious headlines

A listing of some of the wackiest newspaper headlines ever  
<http://bit.ly/Arj3Rs>

## Top 3 Geek Comic Strips

### XKCD

If you haven't read XKCD, you can't be officially labelled as a geek. In its own words this stick-figure humour art explores the funny side of technology, science, mathematics and relationships. XKCD's expressive writing style is what truly tickles the reader's funny bone and captivates everyone.



### Dilbert

An engineer stuck in a corporate job can be constant fodder for jokes, and this opportunity was first realized by Scott Adams. The result is a brilliant combination of versatile characters such as Dogbert, Catbert and Ratbert; and a style of humour that is resonant around the world.

### SMBC

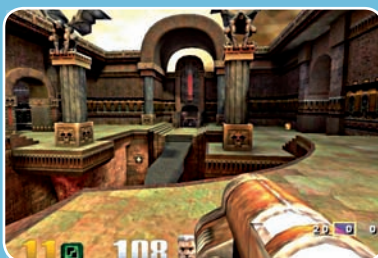
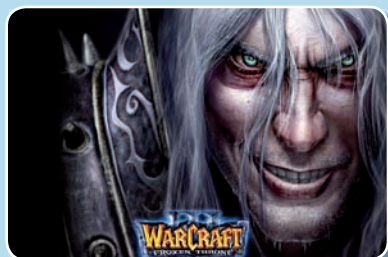
A recent web comic, Saturday Morning Breakfast Cereal or SMBC has attracted a lot of attention. Humour mostly revolves around the topics of science, math, relationships, space, internet, and general satire. It's truly a great comic to unwind to. Head over to <http://bit.ly/18ZpUl>



## How we unwind

### Warcraft strategies

Our skill level in WC3 has improved considerably and we are now actually talking APM and strategy, build order and co-ordinated attacks. Some of us took to surreptitiously watching *Frozen Throne* replays and formulating devious strategies based on what we learned. They didn't always work out but we ended up having an insane amount of fun.

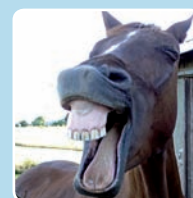


### Quake 3 training

In the middle of our usual Q3 death-matches, Raaabo decided to take a hand at polishing up the "new guys" skillz (gasp!). All of them ended up getting trained in rocket jumping, the correct use of pro-mode and timing rockets to hit opponents in the air. The mayhem that took place after that was the stuff of legends.

### Thinkdigit portraits

If you haven't noticed by now, Thinkdigit.com just got a major facelift. And along with new sections, new skins, better layouts, we also got to glimpse at our midget-sized portraits next to our respective articles. And they were a source of immense amusement for everyone in the team, largely due to the fact that Jiten, our staff photographer, did a very good job of keeping these photos a secret until the grand unveiling.

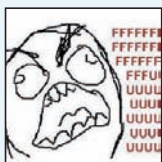


Even while you're reading this, rest assured that our bellies still hurt from all the incessant laughing at ourselves.



# Rage comic characters

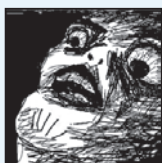
Take a real life situation, the very worst drawings that you can make in Microsoft Paint mash these two up, and voila, you've got yourself a rage comic. These comics are incredibly funny and witty. But if you haven't been following them for some time, you could miss out on what the comic actually meant. Here's a low-down on the who's-who of rage comics, and what their presence signifies.



## Rage guy

Rage guy is usually used to express a situation which portray anger, helplessness and exasperation, having the main character

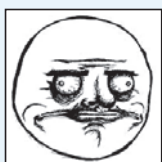
screaming in anger as a result. It started off from 4 pane comic on 4chan's /b/ called 'Toilet splashback experience'. It has become one of the most endearing memes on the Internet.



## Oh Crap! Rage face

Oh Crap! face is usually the last panel in a rage comic. It's a close up of a guy's face showing astonishment, surprise, realization or extreme rage,

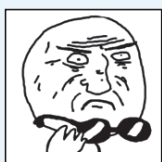
usually accompanied by text in red to share the character's thoughts.



## Me Gusta

Me Gusta means "It pleases me" in Spanish, though most of the time it's translated to "I like it". Originally used in depraved

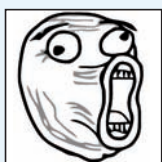
sexual contexts, but now it has grown to include getting enjoyment from disturbing content in general.



## Mother of God

The comic usually has a man walking with sunglasses on and in the last panel, he removes the sunglasses staring with his

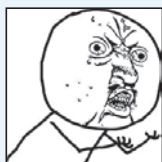
eyes. It's usually associated with awe, astonishment or surprise.



## LOL guy

This guy is used to express tom-foolery, silliness and laughter in general. It has been said to have started from where everything else

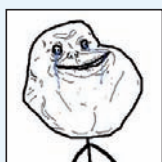
starts, 4chan. It was first seen on Reddit in mid-2010.



## 'Y U NO' guy

The guy comes from a manga called Gantz, some of the fans had traced the image and were circulating it on 4chan. It was first

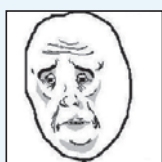
posted on Tumblr, with the Y U NO template. Surprisingly this meme is used in teaching English, as the phrasal template doesn't follow proper grammar what so ever by using these comics to point out the student's mistakes.



## Forever Alone

Nobody has clear idea as to where this comic originated from. It surfaced for the first time in April 2010. It is usually used to express

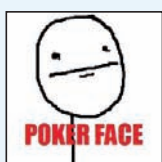
disappointment with life and loneliness. It's usually the last panel of a 4 pane comic.



## Okay guy

Something of a paradox for rage comics, this character tends to be submissive and say 'Okay' when most other characters would disagree

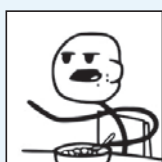
or react negatively. No points for guessing where it originated from.



## Poker face

This guy is used to represent embarrassing social situations and awkward moments, when the character responds with a blank

face and a caption that reads 'Poker Face'. For all the Lady Gaga fans out there, there's a Lady Gaga redux for this comic also.



## Cereal guy

Cereal guy is used as a multi-purpose reaction face. Originating from a comic posted by Bob Averill. Initially called 'STFU when

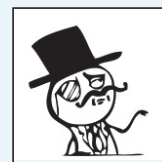
i'm talking' but the name didn't stick, it was renamed by 4chan's /b/.



## Pffftttchh.. guy

Usually used to represent a character who is playing a prank or knows something that the others don't and he's trying to stifle his

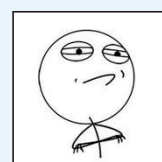
laughter from the others and thus the sound. The guy's name comes from the sound.



## Feel like a sir

This comic is also known as 'like a sir'. It used to represent panache, elegance and wealth. Thus it comes dressed for the occasion

in a victorian era coat, monocle and sporting different mustaches. This guy came into the lime-light when Lulzsec, a hacking group used it for their logo (though they had him hold a wine glass in his free hand).



## Challenge accepted guy

This is Ethan Hunt from the world of rage comics. The character is faced with highly daunting task which

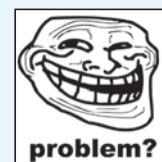
is nearly impossible to achieve, but he still chooses to go ahead with the task.



## Herp Derp


This is the character that populates nearly an entire rage comic. Derp means stupid and stems from the words 'duh' or 'dur'.

Derp or his female counterpart (Derpina) stand for a stupid, annoying and idiotic character in the story.



## Troll face

We can't talk about a rage comic without introducing this guy. Trollface is the character with a large mischievous grin an expression

one carries when trolling. You usually see him when the character is up to some mischief. 

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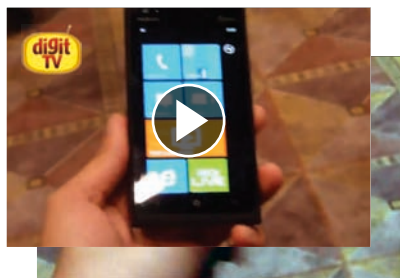
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### OPINIONS



Mala Bhargava  
Editorial Director  
9.9 Media

Our writers, reviewer and editors get a space to speak their heart out on some of the most controversial topics.

You can trust this section to stir up a lot of emotions. We look forward to your comments and opinions on these articles to further fuel those discussions.

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Performance: ★★★★★

Value: ★★★★★

Design: ★★★★★

#### PROS

• Video performance

• Performance in low-light

• Detail in macro mode

• Optics are excellent

#### CONS

• Lack of hot shoe

• Noise Reduction algorithms too aggressive

### SOCIAL CONNECT

Find us on Facebook facebook Join us on thinkdigit forum Poll your views on quick poll

h9i Digit "Which one of these is better mode?"

10,870 people like Digit

• "Barack Obama and Steve Jobs argued over advertising" Reaction News

• "Apple Airport Express - any users..." Location, wireless, router

• "Want to buy Bata OS phone?" Mobile phones

Which is the best Tablet OS today?

Poll Results

|                      |     |
|----------------------|-----|
| • Google Android ICS | 61% |
| • Apple iOS 5        | 34% |
| • BlackBerry OS 5    | 5%  |

Total Votes: 1000



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\*Conditions Apply



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- Gives you peace of mind (Toshiba 3-Year Limited Warranty).



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**For more information : Toshiba India Pvt. Ltd. / Mr. Polad Garda - [polad.garda@toshiba-india.com](mailto:polad.garda@toshiba-india.com)**

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### **Kaspersky Internet Security 2012 - Hybrid protection combining in-the-cloud updates with resident protection on PCs**

- **URL Advisor** - indicates the safety level of the websites you are browsing
- **System Watcher** - monitors suspicious application activities allowing you to roll back changes made by malware
- **Application Control** - restricts program access to personal data and system files
- **Safe Run Mode** - launches suspicious applications and websites in an isolated environment where they cannot harm your computer
- **Two-way personal firewall** - protects you against hacker attacks
- **Parental Control** - provides flexible and effective settings to keep your children extra-safe when they use the Internet

### **Kaspersky Antivirus 2012 - Real-time protection from malware and viruses that doesn't slow you down**

- Real-time protection against viruses and spyware
- Scans websites and emails for malicious code
- Protects your digital identity at all times
- Vulnerability scan and treatment advice
- Easy-access Desktop gadget

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